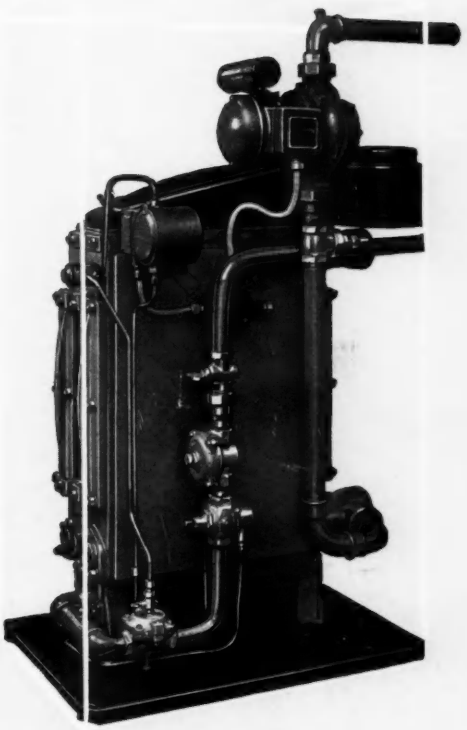
Gas Journal

VOL. 299. 111th YEAR. LONDON, AUGUST 12, 1959 No 5006 PRICE 1/6

THE UNIVERSITY OF MICHIGAN
SEP 3 1959
ENGINEERING LIBRARY

'Diplomat'
30, 44 and 66
Small Bore Units

have all their works
inside one case



All servicing and maintenance on these new 'Diplomat' Gas-Fired Small Bore Units can be carried out from the front of the boiler. Installation is straight-forward as they are conceived and designed for easy fixing. Electrical connections between the time switch and accelerator are pre-wired to cut down installation work. A 'Diplomat' 100 Small Bore Unit is also available as a packaged unit but with accelerator mounted behind the casing.

'Diplomat' Small Bore Units
models of self-control

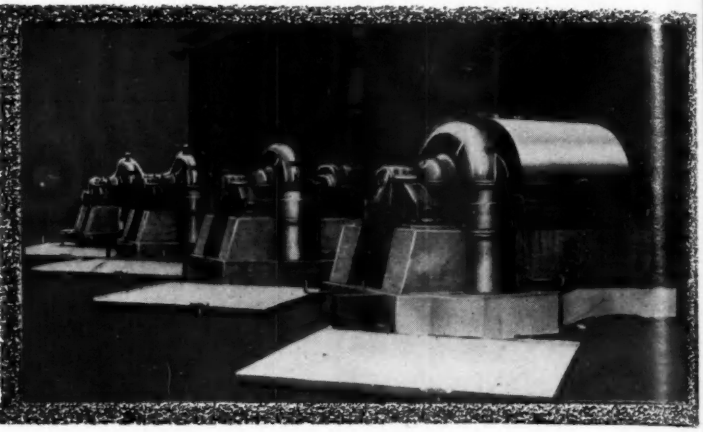
THOMAS POTTERTON LIMITED, 20/30 Buckhold Road, London S.W.18.
A subsidiary of The De La Rue Company Limited.

'Diplomat' is a registered trade name

progress with Donkin Gas Boosters

Type O.L.P. 56

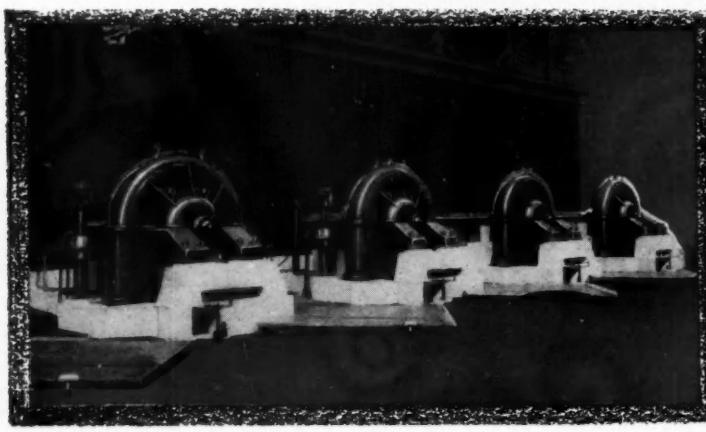
Four Donkin Type OLP.56 Gas Boosters recently installed at the Old Kent Road Works of the South Eastern Gas Board



Two of the boosters are driven by 300 H.P. L.D.C. Nevelin "Varionic" speed controlled Motors, through speed increasing gears, and two by 'Ruston Paxman' 8 cylinder Oil Engines through speed increasing gears and centrifugal clutches.

The duty of each machine is 350,000/500,000 cu. ft./hr. against a pressure of 1 to 5 p.s.i.g.

The Boosters incorporate weatherproof features for operation in the open air.



Type V.H.P. 180

Four Donkin Type V.H.P.180 Gas Boosters recently installed at the Old Kent Road Works of the South Eastern Gas Board

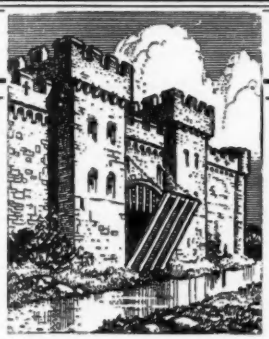
Two of the boosters are driven by 180 H.P. Squirrel Cage Electric Motors through Scoop Controlled Fluid Couplings, and two by 'Ruston Paxman' 4 Cylinder Oil Engines with centrifugal clutches. The booster speeds are controlled by Donkin control equipment to maintain the required outlet pressure.

Range of duties from : 300,000 cu. ft./hr. with a 4″ w.g. differential to 1,500,000 cu. ft./hr. with a 24″ w.g. differential and a possible future duty of 40″ w.g. differential pressure.

The Boosters incorporate weatherproof features for operation in the open air.

The **BRYAN DONKIN** Co.Ltd.

THE BRYAN DONKIN COMPANY LIMITED, CHESTERFIELD



PROTECTION

GAUNTLET

GAUNTLET

WEATHER TESTED PAINTS

ARCHD H. HAMILTON & CO. LTD.

27-37 BARDOWIE STREET POSSILPARK GLASGOW N2

FLANGES—
MACHINING

Mild Steel Flanges and Blanks profile cut and drilled to standard and special specifications.

All types of ducting and pipework up to ½" thick wall.

Machining capacity available including turning up to 5' 6" diameter.

MODERN CONVEYORS, LIMITED

AYNHO ROAD, ADDERBURY, Nr. BANBURY, OXON

Telephone: Adderbury 238-9

2-243432 o.s.p.

Gas Journal

VOL. 299 No. 5006 August 12, 1959

IIITH YEAR

MANAGING DIRECTOR : Clifford A. King

EDITOR : Geoffrey W. Battison

ASSISTANT EDITOR : Colin J. Godbold

TECHNICAL EDITOR : Charles J. P. de Winton, T.D., M.A., M.Inst. Gas E., M.Inst F.

Published by Walter King Limited,
11, Bolt Court, Fleet St., London, E.C.4

Telephone: FLEet Street 2236-7 Telegrams:- Gasking, Fleet

CONTENTS

EDITORIAL COMMENT

The Coal Board in Trouble Again - - - - - - - 21
No Business Like Show Business - - - - - - - 24

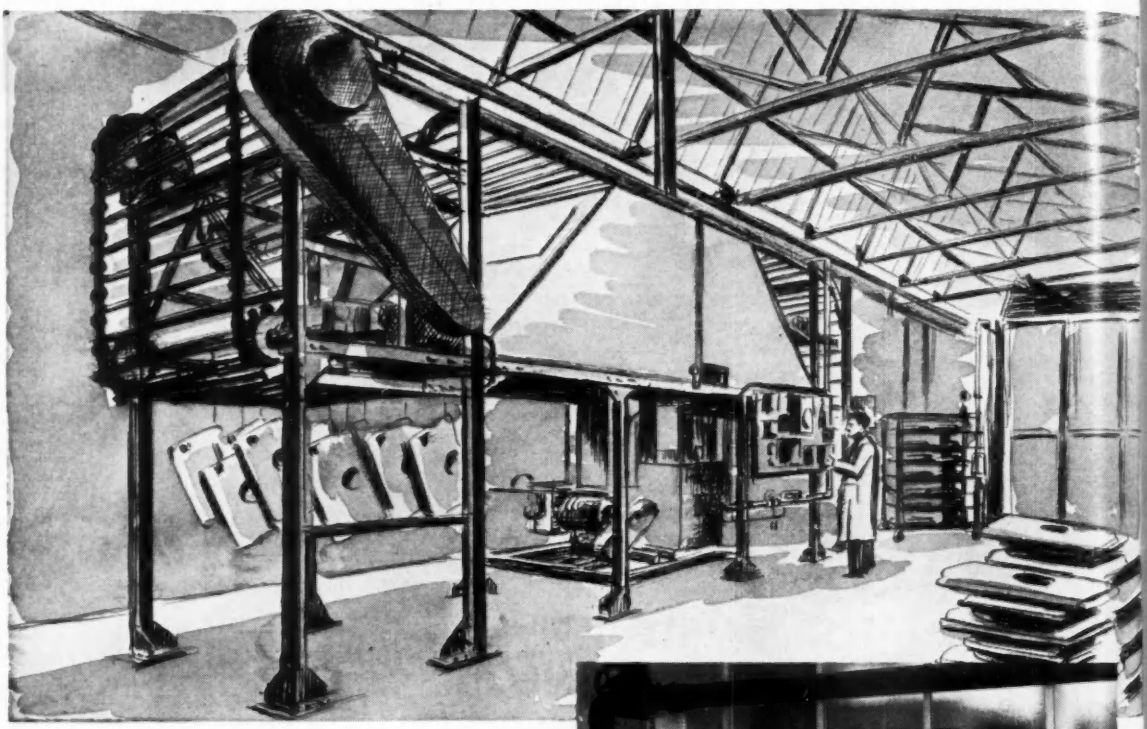
NEWS OF CURRENT EVENTS

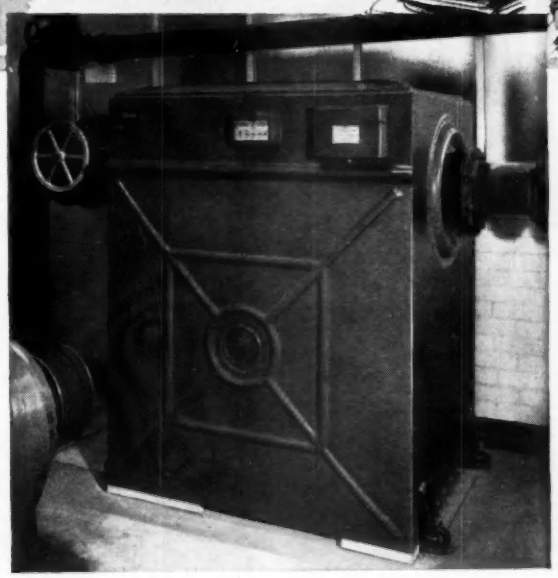
Personal - - - - - - - - - - - - 25
Obituary - - - - - - - - - - - - 26
Coal and Gas Industries Must Have Plan for Future, says Chairman of the N.W.G.B. - - - - - - - - 26
Reorganisation of the North Eastern Gas Board - - - 27
West's Group of Industries - - - - - - - - 27
Southern Gas Board's Coke Distributors' Day - - - - 28
Boards Revise Tariff Schemes - - - - - - - 29
Gas Staff Pay Keeps Pace with Living Costs - - - - 30
'Highland' Caterers Chose Gas - - - - - - - 31
Southern Gas Board's Progress Bulletin - - - - - 32
New Zealand Orders Plant From W-D - - - - - 32
'Industry Needs 10% Technologist Employees' - - - 36

TECHNICAL RECORD

The Elgin to Cullen Integration Project. By S. R. McCrae - 33
The Development of Aberavon Gasworks. By W. D. Rees - 37

PUBLISHERS' NOTICE, See Page 360, May 27, 1959





meters to measure

for any industrial requirement

Britain's industries use gas extensively, and wherever gas is used there's a gas meter . . . and it's likely to be a Thomas Glover meter. T.G.'s have supplied meters for all types of industrial establishments. We are specialists in the manufacture of meters for special requirements, and pride ourselves on being able to supply any capacity required—size is no obstacle. Why not consult us about your industrial requirements? You'll get the meter you want and you'll get it on time. You'll be satisfied with the T.G. service and the finished article. The T.G. Industrial Meter is a "tailor made" product of true craftsmanship, renowned for its accuracy in measurement.

THOMAS GLOVER & CO. LTD.,

GOTHIC WORKS, ANGEL ROAD, EDMONTON, LONDON N.18 and BRANCHES

Gas Journal

VOLUME 299 No. 5006 AUGUST 12, 1959 111th YEAR

The Coal Board in Trouble Again

RESTORED to the desks and armchairs of our readers after a much regretted absence of seven weeks, the 'GAS JOURNAL' has a clear duty to perform—to acquaint those who depend upon it for news of the industry and technical data with as much as possible of what has transpired during its enforced silence. Coming as it did at the latter part of June and embracing all of July and a week of August, the printing dispute might have been expected to coincide, more or less, with the 'silly season' during which holidays drive a clean wedge into the usual machinery of meetings, openings, contracts and the like. Not so. As it happened those seven weeks were extremely eventful so far as the fuel industries were concerned, and were marked by one of the liveliest and most publicised bust-ups for some time. It is our intention to review briefly the principal events which constituted this bitter and unresolved quarrel.

To say that the National Coal Board was at the root of the trouble will surprise no one for since this ailing giant began to get into serious difficulties some five years ago, it has been the hub of a long series of rows which have radiated far and wide and which have embraced American coal, Middle East oil, South American methane and heaven knows what else. The blunt fact of the matter is, of course, that the Coal Board, having priced itself out of certain of its markets, has made a series of miscalculations and under-estimates beside which Napoleon's foray into Russia appears as small beer indeed. With an industry contracting to an annual output of perhaps 200 mill. tons, with stocks rising alarmingly (30 mill. tons is the current figure), and faced with closing pits and redundant miners, the N.C.B. has very naturally looked round for someone to blame, other than itself, that is. Gleefully, but oh how hypocritically! it picked its old customer, the gas industry, some of whose custom it had deliberately driven away, while more had been lost by sheer force of circumstances.

This monstrous accusation was made by the usually fair and apparently always hard-pressed Sir James Bowman, the Chairman of the N.C.B., in his address to the National Union of Mineworkers' conference at Scarborough. We will quote him. First he set the scene: 'In 1958,' he reminded his audience, 'consumption of coal by this industry was 3 mill. tons less than in 1956, and we expect a further fall of more than 1 mill. tons this year. Whereas not so long ago we had estimates from the Gas Council pointing to the use of some 27 mill. tons of coal a year in the mid-1960's, we now have estimates of less than 22 mill. tons a year for that period, compared with almost 25 mill. tons last year. Oil competition is a principal cause of the trouble.' Not the price of coal, you notice.

'The gas industry itself is also faced with competition,' he continued. 'But is it conceivable that the employment and security of men at the pits producing gas-coal, the capital investment, and the vast reserves of premium quality coal, should all be threatened, because of the question of a narrow advantage in one section of this market? This situation could give rise to very serious social problems in certain coalfields. We have made our views known and we hope that the larger national considerations will yet be taken into account. But if gas-coal pits have to be closed because of this, when we have done all we possibly can, then just don't blame us.'

This attack was widely reported, as were the remarks of Mr. Sam Watson, the Durham miners' secretary, who described the gas industry's liquid methane experiment as 'Mad Hatter's economics' but, in general, newspapers appeared sympathetic to the gas industry's problems; indeed, a few days later the *Birmingham Mail* referred to the Gas Council as 'one of the most progressive of the state boards.' Meanwhile, another viewpoint was hinted at by the Transport and General Workers' Union who, having commenced their annual conference with a declaration in favour of more

nationalisation, later protested against the principle that a nationalised industry should pay its way.

Trouble was thus brewing in preparation for the coal industry debate in the House of Commons, but before that came about *The Times* stirred in a little more seasoning by publishing a leader suggesting that the Government in their statements on fuel policy spoke with two voices. 'One is concerned above all to assure the user, industrial or domestic, that he shall have free choice. Competing fuels must jostle each other and gain or lose markets by their competitiveness. . . . There should be no restrictions on imports, no compulsion of consumers, no bolstering of uneconomic pits, no duties. . . . The second voice speaks of intervention—the activity of the Minister, for instance, in ensuring that less oil is used for the generation of electricity than was planned two or three years ago, but that the programme for nuclear energy shall not be reduced. All this alters the cost of fuel and power—and so influences the consumer's choice. It is the scope of nationalisation which allows Lord Mills to speak with two voices. He leaves most consumers free—except the largest, over which he exercises control through public ownership. Lord Mills explained what a machine he has at his Ministry to co-ordinate policy—with its separate expert departments on coal, oil, gas, and electricity, and its official co-ordinating committee. It might, he allowed, function badly. It did not seem to occur to him that for the policy expressed by the first voice it might be the wrong machine.'

This co-ordinating machinery, suggested the leader, did not forewarn the Minister of his present difficulties. Expert bodies had encouraged a policy of substituting oil for coal and put steam behind the programme for nuclear policy. It was claimed that in a surprisingly short time these sources would provide electricity more cheaply than any existing sources. It dismissed as 'plainly bad' the suggestion that opencast mining should be stopped.

Concentration on Utilisation

Commenting on the immense range of coal production costs and pointing out that some of the coal produced at lowest cost has been hardest to sell, *The Times* added: 'But it is adapted to power station use or for complete gasification, and some of the lower cost coals could be used for blast furnace coke.' What was needed was a concentration on problems of utilisation to make the best use of these coals. This would involve converting more coal near the mines into forms cheap to transport. The coal industry must decide what business it could hold and go out for it vigorously. 'Interference in this competition by the Ministry to bolster coal or any other fuel will be dangerous economically, as international competition in export markets becomes—as it will—increasingly severe.'

There was no lack of other Press comment on the subject. An article published in the *Daily Telegraph* entitled 'All That Small Coal Could Have a Big Future,' referred to the results of the Coal Board's traditional relationship with the gas industry being overtaken by new techniques in gas production. Having listed some of those methods, the article described as the 'main hope' the plant for the complete gasification of low-rank coals planned for West Fife and the Midlands. Once this was achieved, the way would be open for a revolutionary development in the association of the coal and gas industries. With complete gasification plants located near the collieries, coal ought easily to hold its own. 'Not only would the gas industry get access to the cheapest sources of fuel, but it would be able to produce gas under high pressure and so be in a position to realise its aim of a national gas grid. By this means gas could be pumped cheaply—thanks to new techniques of pipelaying—from the Midlands to London. The United States has a nation-wide system of pipe-lines to ensure that it gets its natural gas cheaply. There is every reason why we should do the same for our coal gas.' Another article, in *The Scotsman*, maintained that the feeling within the gas industry seemed to be that its first duty ought to be to itself and that it was no longer an adjunct to the coal industry. It also suggested that the N.C.B. did not appear to have as good relations with the nationalised gas industry as they had with the electricity generating industry.

The Coal Industry Debate

Thus by the time the coal industry debate was held in the Commons—with Lord Mills sitting in the Peers Gallery—not only had M.P.'s been stimulated by the Press, but the thinking public as well.

Spearhead of the Opposition was Mr. A. Robens, who initiated the motion 'That this House regrets the failure of Her Majesty's Government to plan the place of the coal industry in the national economy.' His theme was that the coal industry needed time to contract and instanced the effect on the Durham coalfields of the gas industry's reduction in consumption from 27 mill. tons to 22 mill. tons by the middle of the '60's. This would mean that the output of 21,000 miners would not be required in order to get an overall gain in the gas industry which could only be described as of marginal benefit. One of the principles of public ownership was to co-ordinate the economic activities of these great industries so that they served social as well as economic purposes, said Mr. Robens. 'The Opposition believes in freedom of choice consistent with the need to look at the social and economic needs of the nation. We would not dictate to domestic consumers whether they should use oil, or coal, or gas or electricity. Nor would we want to dictate to industry generally what kind of fuel they should use. But the Minister of Power has a statutory duty to co-ordinate the fuel and power industries, and if he permits freedom of choice within the nationalised industries without regard to the economic and social events that will follow he will be destroying these industries.' He suggested that the rate of contraction announced should be cushioned to something like one-third.

Replying, Mr. Reginald Maudling, the Paymaster-General, cautioned against exaggerating the coal industry's difficulties. The prospects were anxious but not grim. It was still reasonable to assume that the demand for energy in 1965 would be the equivalent of 300 mill. tons of coal, and the contribution of coal itself would depend on its competitive position.

'It would be wrong to suggest that there has been some sudden new development in the gas industry; as it

were some attack on coal and some deliberate switch to oil. That is not really a fair picture. As I understand it, over a long period the gas industry has used a fair amount of oil in making carburetted water gas and recently a number of factors have encouraged the gas industry to make greater use of oil. For example, there is difficulty in selling coke. We can never consider the economy of the gas industry without remembering the importance of the disposal of coke. Also, if there is a chance of using waste gases from refineries it is sensible to use them and not blow them into the air.

'There have been difficulties and dangers in the past about the supply of carbonisation coal. That is not so at the moment, but two or three years ago it was very difficult to be confident about the future of carbonisation coal. Also the gas industry feels that the increase in the price of the coal that it uses for carbonisation has been considerable. For all those reasons, the gas industry, as a natural evolution of its policies, has been ready to utilise more oil and products of that kind.

'The gas industry is clearly going to continue predominately based on coal. Together with the Coal Board and other people the gas industry is pursuing experiments into the complete gasification of low-grade coals. We regard this as being of the greatest importance, and I know that the Gas Council also regards it as most important. It is wrong to suggest that the Gas Council is deliberately turning its back on coal. It has been driven to use more oil, for reasons which I have been explaining. The gas industry has to sell its product in competition with other forms of fuel. If the gas industry does not prosper, it cannot be a good customer of the coal industry. The gas industry can be a good consumer of coal only if it is prosperous, and it can prosper only if it keeps its costs and prices down to face competition, which is quite severe.

Co-operation in a 'Spirit of Friendship'

And then with his customary urbanity Mr. Maudling commented on Mr. Robens' idea of co-ordination: 'I was interested in the right hon. Gentleman's thesis that it would be right and proper to restrain the use of oil by the gas industry while at the same time continuing to allow freedom to industry generally to use oil if it wishes to do so. That is a very interesting point of view. I was glad that the right hon. Gentleman welcomed the continuation of experiments by the Gas Council. It would be wrong to hold up any experiment that might give rise to substantial reductions in the cost of gas. We should not assume that the development of things like liquid methane need lead to the displacement of coal. They might lead to the displacement of oil. In any case, it is impossible to take a decision on this matter until we have more information about the experiments with methane and the technical and economic consequences involved. At the request of my noble Friend the Coal Board and the Gas Council are carrying out a joint study of the whole matter. I am sure that they are doing it in a spirit of friendship and co-operation because they have a close interest one in the other. It is not in the interests of the gas industry to damage the coal industry, nor is it in the interests of the coal industry to damage the gas industry. Their prosperity is certainly closely linked.'

In the discussion which followed, Mr. E. Shinwell (Lab., Easington) rambled on for some time on the subject of solid smokeless fuels, ending with the surprising statement: 'Without any hesitation, I would restrict the use of gas, first of all because it does not use coal to the extent that it should, and secondly because in many respects it is wasteful. . . . I believe that both for illumination (!) and for space heating to a large extent it is far better to use electricity than gas.'

The Gas Industry Criticised

The remarks of two other Labour members are worth quoting. Mr. Harold Finch (Bedwellty), while giving the gas industry credit for showing initiative and enterprise, said that 'Since the coal industry has been the pioneer and the economic foundation of this country, it is not too much to ask the gas industry to restrict oil consumption. I look with alarm on the experiments conducted by the gas industry in the use of liquid methane. This is a policy which will make us more dependent on imports from abroad.' Rather more outspoken was Mr. Roy Mason (Barnsley), who said: 'The gas industry is a typical example of Ministerial interference on a non-statutory basis as practised by every Minister on the Government Front Bench against the chairman of every nationalised industry. We get it, in the gas industry, where the Minister has purposely intensified competition between the chairmen of each board. He has been fostering the commercial profit instinct among the members of these boards and in the industry too. The attitude now of each individual board is that " we shall swim and the rest can sink." We have seen the Government cynically exploiting the lesser instincts of mankind. They foster in the chairmen of the boards the instinct of greed for profit. This brings in its train fear of unemployment among the workers, including those in the mining industry. It is obvious that the Government has given the Gas Council the green light to go ahead and to ignore coal. It has told the gas industry that it is quite safe to do these things, particularly to importing oil. It is not easy to switch back again to a different form of fuel. In the main, therefore, this is another market that has been lost. With Government encouragement, the Central Electricity Generating Board acted similarly to the Gas Council. Agreement was reached to import a tremendous amount of oil and to convert the power stations, but there is a measure of comradeship and friendship between the electricity industry and the coal industry, far better than that with the Gas Council.'

Alas, the debate ended in noisy confusion when Sir Ian Horobin, Parliamentary Secretary to the Ministry of Power, at the outset of his speech replying to the debate, said: 'There will always be Socialists so long as there is anything left to steal.' The Opposition motion was defeated by 304-238 votes.

During the past two weeks coal has stayed in the news. It has been reported that Sir James Bowman is to offer a gift of £2,800,000 to veteran miners if they will quit their jobs. Fourteen thousand men over 65 years of age still work in the pits. Under the new proposals retirement at 65 would be compulsory. The inducement would be a present of £200 for each man in addition to the existing pension scheme that provides £1 a week.

Meanwhile, as we mentioned earlier, unsold coal stocks at pithead and opencast sites have now reached 30 mill. tons, the revised figure that only three months ago the N.C.B. considered the permissible maximum for the end of the year. In spite of all the cutbacks, output this year is between 6% and 7% above consumption.

The annual report of the Industrial Coal Consumers' Council pointed out that if the N.C.B. had to stock more coal for industry in the summer, the increased costs would inevitably be reflected eventually in the selling price of coal. The report regretted that the N.C.B. could not obtain, from representatives of users and distributors, acceptance of its proposals for inducing industrial consumers to stock coal in the summer. Difficulties involved in moving such coal during the winter could have serious consequences for consumers, it added. The council suggested that those consumers able to take their supplies in harmony with production should be offered some incentive to do so. It would also support the N.C.B. if that body decided to ask the Government for greater commercial freedom in the pricing of coal in competition with oil. The Industrial Coal Consumers' Council report was accompanied by that of the Domestic Coal Consumers' Council, which said that householders would have to rely mainly on ordinary coke because of the shortage of other smokeless solid fuels.

No Business Like Show Business

THERE is a certain magic about agricultural shows, an atmosphere in which the dark suited representatives of the gas industry and their equipment appear with some dignity and distinction, but without their looking entirely at home. And yet, year by year, gas displays at these events show steady improvement. The quality of the stands becomes higher as more is learned about the type of approach best calculated to appeal to visitors. According to where the show is held the latter vary in proportion between townsfolk and country dwellers, and the organisers of the gas stand must plan their story accordingly.

The premier show is, of course, the Royal, held this year for the first time for nine years at Oxford. On the last occasion the modest gas stand was in a hard-to-find position on the perimeter of the ground, and was approached through what seemed like miles of the mud which characterised the show that year. Last month the picture was very different, with a splendidly designed stand in a much more accessible (though still not ideal) position. The usual facilities for holding demonstrations and displaying appliances were provided in unusually attractive settings, and a feature worthy of comment was the substantial quantity of catering equipment on show. However, this was an agricultural show and pride of place went to a Beverly 'A' type coke-fired grain drier furnace designed by the Gas Council in co-operation with the National Institute of Agriculture and manufactured by D. Clark & Company of Hull. A general purpose unit for requirements up to 200,000 B.t.u. per hour, this should be well received by farmers who need a furnace unit for batch or bin driers. (Incidentally, this furnace was also shown on the Gas Council's Pavilion at the Royal Highland Show at Aberdeen.) At Oxford we particularly liked the ' Sold ' label boldly affixed to the furnace on display. Another exhibit of interest was a gas-fired TeleHeater made by ScotLec of Ayr, particularly as it was stressed that this development had still to be tested by the Gas Council laboratories! And it is perhaps worth mentioning that the stand showed a pleasant attention to detail by the inclusion of such minor assets as a plan of the showground.

Having visited the Royal Counties Show over a number of years we have come to expect an ambitious display by the Southern Gas Board—and their effort this year at Southsea was no exception. To say that it dominated the other trade stands in the immediate vicinity would be no exaggeration; yet at the same time it was dignified in its layout and objective in its appeal.

Using the ' upper level ' technique, which we have commended on previous occasions for this type of display, the Board set out to show a representative selection of modern gas appliances arranged around a central demonstration area, where the Home Service Department were busy throughout the show.

Coming to the industry's principal point of contact with agriculture, we were pleased to note a different approach from last year to the subject of gas liquor, in which sphere, of course, the S.G.B. can justly claim to be among the pioneers. Instead of being tucked into a corner of the main gas stand, where farming visitors scarcely noticed it because it was dominated by the major display, the liquor section on this occasion occupied an entirely independent site alongside the gas exhibit. Standing thus foursquare on its own feet, so to speak, it attracted a good deal more attention from the visitors who really mattered, as the number of enquiries amply proved.

The section was staffed by experts from the principal contractors responsible for the application of gas liquor in the southern area—Agricultural Services, Ltd., of Reading, and Mid-Surrey Agricultural Fertiliser Services, of Guildford. Effective use was made of photographs, showing the results of various treatments, supported by leaflets and reprints of technical articles and large display boards putting over the advantages of the liquid dressing in comparison with traditional forms of nitrogen. Sample bottles of liquor demonstrated the clear colour and purity of modern gas liquor as used on the land.

And we heard a whisper at Southsea that in the southern area compound dressings based on gas liquor have now passed beyond the experimental stage and may soon be available commercially, which will be an important step towards widening the use of ammoniacal liquor in agriculture.

Personal notes

CHANGES IN THE NORTH EAST

MR. F. C. BARKER has been appointed Deputy Chief and Constructional Engineer. He was previously deputy chief engineer.

MR. F. H. KING has been appointed Production Engineer. He was previously deputy group general manager, Bradford Group.

MR. R. H. O'NEILL has been appointed Distribution Engineer. He was previously group distribution engineer, Huddersfield/Halifax Group.

MR. L. W. ROBERTS has been appointed Transport Officer. He was previously grid general manager, West Yorkshire Gas Grid.

MR. A. R. MITCHELL has been appointed Divisional Production Engineer, Leeds/Wakefield Division. He was previously works manager, Birkshall works Bradford Group.

MR. P. SUMNER has been appointed Divisional Production Engineer, Hull/York Division. He was previously deputy group general manager, Leeds Group.

MR. R. J. THOMSON has been appointed Divisional Production Engineer, Bradford/Huddersfield Division. He was previously group engineer, Huddersfield/Halifax Group.

MR. P. SPRAGG retired with effect from March 29. Mr. Spragg was assistant coke officer.

MR. W. BEDWELL has been appointed Assistant Coke Officer. Mr. Bedwell was previously group coke officer, Hull Group.

MR. A. L. HIGHAM, Group General Manager, Hull Group, retired on July 31.

MR. A. COLE has been appointed Group General Manager, Hull Group. He was previously deputy group general manager, Hull Group.

MR. D. HUZZARD has been appointed Technical Assistant (Works), Bridlington District. He was previously technical assistant, East Hull works.

MR. T. N. HELLOWELL has been appointed Group Coke Officer, Hull Group. He was previously group coke officer, Wakefield Group.

MR. C. A. NEWHAM, Group General Manager, Bradford Group, will retire on August 31.

MR. J. BAXENDALE has been appointed Group General Manager, Bradford Group, with effect from September 1. He was previously district engineer and manager, Scarborough District, York/Harrogate Group.

MR. K. E. LAYCOCK has been appointed Works Manager, Birkshall works. He was previously works manager, Huddersfield District.

MR. N. T. FALLON has been appointed Group Distribution Engineer, Huddersfield/Halifax Group. He was previously grid engineer, West Yorkshire Gas Grid.

MR. P. BRINDLEY has been appointed Senior Chemist, Huddersfield District.

MR. P. GRIEFF has been appointed Technical Assistant (Industrial), Wakefield Group. He was previously junior technical assistant (industrial), Bradford Group.

(See preliminary details of re-organisation in the North Eastern Gas Board on p. 271).

DR. JAMES BURNS, G.M., has been appointed a Member of the North Thames Gas Board. Dr. Burns, who is 55, will combine the duties of Board membership with those of his present position of Chief Engineer to the Board. Born in Inverness-shire and educated at the Royal Academy Inverness and at Aberdeen University, he won the Carnegie Fellowship and carried out research work in chemistry at Cambridge University for three years. He was President of the Institution of Gas Engineers for 1957-1958.

MR. J. W. CHRISTIE has been appointed Scottish Gas Board Assistant Group Distributing Engineer in Dunfermline, Kirkcaldy and Leven Groups. MR. A. ADAMSON is to be Service and Sales Superintendent of Burntisland and district (Kirkcaldy Group) and MR. H. RUSSELL becomes Sales Representative, Kirkcaldy Group. Mr. Christie, formerly district superintendent at Lochgelly, entered the gas industry at Burntisland 29 years ago. Mr. Adamson was a fitter at Kirkcaldy and Mr. Russell was formerly a meter reader-collector.

MR. L. R. MEEK, who until recently was contracts manager with Horseley Bridge & Thomas Piggott Ltd., of Tipton, is now operating in the Midlands as an engineers' agent. His activities include representation of the well-known firms, Peter Brotherhood Ltd., and Wm. Neill & Sons (St. Helens) Ltd.

MR. A. A. CLARK, formerly Tottenham Division Press Officer and Editor of the Eastern Gas Board's newspaper, *E.G. News*, has been appointed Area Press Officer. His office is at the Board's Headquarters, Sun Building, Clarendon Road, Watford. He will continue as Editor of *E.G. News*. MR. J. TALBY, formerly of Watford Division and Assistant to the Editor of *E.G. News*, has been appointed Assistant to the Area Press Officer.

MR. A. G. GRANT, Managing Director of Whessoe Ltd., Darlington, has been conferred with the honorary degree of Doctor of Civil Law by the University of Durham. Mr. Grant is a member of the Court of the University and chairman of the University's appointments bureau.

DR. C. M. CAWLEY, C.B.E., has been appointed Chief Scientist to the Ministry of Power in succession to SIR KELVIN SPENCER, C.B.E., who has retired from the public service. Dr. Cawley, who is 52, has been at the headquarters of the Department of Scientific and Industrial Research for the past six years. He has been responsible for administering general policy in relation to the work of the Department's research stations and to grants made by the Department to the Universities and other bodies for the promotion of research and the training of research workers. He graduated at London University with first-class honours in chemistry and joined the scientific Civil Service in 1929, serving on the staff of the Fuel Research Station until 1953. He will take up his new appointment at the Ministry of Power in the early autumn.

MR. ALAN BUTTERFIELD has been appointed Chief Accountant of the Northern Gas Board as from September 1. Mr. Butterfield, who is Deputy Financial Officer of the Scottish Gas Board, was born in Nottingham in 1914 and educated at the West Bridgford County Secondary School, Nottinghamshire. He was articled with a Nottingham firm of chartered accountants and became an Associate of the Institute of Chartered Accountants in 1936. He had experience in professional accountants' offices before joining, in 1941, the Headquarters staff of the General Post Office Contracts Department. In 1946 he became assistant accountant of Henley's Tyre & Rubber Co. Ltd., and in 1950 was appointed chief accountant of that company. He joined the Scottish Gas Board in 1956.

MR. DAVID E. BAIRD has been appointed Director of the British Coking Industry Association. Mr. Baird has been successively deputy production director, carbonisation director and deputy chairman of the Durham Divisional Coal Board. He is a member of the Coke Oven Managers' Association, the Institution of Mining Engineers, and is on the Council of the North of England Institute of Mining and Mechanical Engineers.

LORD GEDDES, C.B.E., part-time Member of the Scottish Gas Board, is a member of the Consumer Protection Committee, set up by the Board of Trade to consider if further measures are needed to protect the public. The Committee will review the working of the law on merchandise and trade marks.

MR. E. SEYMOUR-SEMPER has been elected President of the Institute of Welding for 1959-60. MR. W. BARR, O.B.E., and MR. E. FUCHS, are the two new Vice-Presidents elected this year. Mr. Seymour-Semper is a Director of Hancock & Co. (Engineers) Ltd. Mr. Barr is the Chief Metallurgist of Colvilles Ltd., and Mr. Fuchs is Welding Engineer of Imperial Chemical Industries Ltd., Alkali Division.

Coal and gas industries must have plan for future, says Chairman of the N.W.G.B.

THE Coal Board has only two markets of which it can be sure in the future —the coke oven and gas industries.

Of these, in 25 years' time even the coke ovens may be lost to coal, Mr. D. P. Welman, Chairman of the North Western Gas Board, told the Manchester and District Section, I.G.E., at Morecambe.

Speaking at the Chairman's Day lunch of the Section, at which was present Colonel G. G. H. Bolton, M.B.E., M.C., Chairman of the North Western Division of the Coal Board, Mr. Welman added: 'If in that time the gas industry has failed because it cannot compete, then we are together in a most disgusting predicament. And that is not necessary.'

There had to be a proper plan for the future, but first someone had to take his time and decide what that future was going to be.

Courage needed

Then the plan had to be put into effect. 'All it needs,' claimed Mr. Welman, 'is someone—the Minister perhaps—who might have the courage to say "All right, what is needed here is an opportunity to sell to the gas industry at the right price".'

In 1923 said Mr. Welman, coal's contribution to the heat usage in this country was 97%, by 1948 the proportion had dropped to 90%; and last year it was down to 80%. Statistically, there was every reason to believe that by 1985 the figure would be 50%.

Referring to 'the ghastly mess that the coal industry is now in from a marketing point of view,' the Chairman suggested that to look forward too quickly and too sweepingly was bad. They could come to the conclusion that the 'oil era' simply meant that salesmanship in the oil industry had been better than the other industries' salesmanship.

No direct use

Mr. Welman demanded: 'Can you blame anyone if they are interested in finding the cheapest and easiest form of heating? No one in the future is going to use coal directly for producing heat, but there is no doubt whatever that people would use gas in preference to oil if it is nearly free from sulphur, non-toxic, and at a reasonable price that is competitive with the alternative fuels available.'

The coal was too expensive to produce the fuel necessary, in the right condition, where the public wanted it at the price they wanted to pay.

'We are going to chemicalise the gas industry and provide the ideal gas at the right price. We are going to produce also sensible, marketable, by-products.

'We in the North West have given assistance to the Coal Board by not demanding any longer only the best coal that they can provide. Over the past two years we have taken as much as 10% washed smalls, partly to enable the Coal Board to find a general market for these. That has not been an accident.'

Mr. Welman was replying to Colonel Bolton's toast to the North Western Gas Board.

Colonel Bolton said that the price policy of the Coal Board did not seem to meet the views of Mr. Welman nor, he was sure, the views of the group managers, but the Coal Board had not been able to follow, at any rate in the North Western area, the same wonderful profit record that the area gas board had.

'I think we have got to work together,' he added. 'The main thing is consistency of quality and that is a matter to which we are giving the most serious consideration.'

Mr. D. D. Melvin, President of the Institution, proposed the toast of the Manchester Section, and Mr. A. H. Nicholson, Chairman, responded.

Featured as part of Chairman's Day was a tour of the recently commissioned White Lund gasworks.

Obituary

MR. CHARLES COOPER

MR. CHARLES COOPER, former chief chemist with W. C. Holmes & Co., Ltd., has died. He was born at Ashton-under-Lyne in 1891, graduated from Manchester University in 1910 and obtained his M.SC. by thesis in 1911. Mr. Cooper spent two years lecturing at the Royal Technical Institute at Salford and for five years was chief chemist with the West Cumberland By-Products Co., Ltd., at Flimby, near Maryport, before joining W. C. Holmes & Co., Ltd., of Huddersfield, in 1918. He retired from the company in 1956, at which time he was joint managing director and head of the gas and chemical division. Mr. Cooper was retained by the company as a consultant, a post which he held until his death. He also retained his directorship of the parent company, B.H.D. Engineers Ltd. During his career, Mr. Cooper became an authority on the treatment of fuel gases and the recovery of by-products. His name was particularly associated with the introduction of gas drying, using calcium chloride solution, and with the problems of condensation and washing of coal gas and the recovery and purification of benzol. He obtained a number of patents for various processes and improvements and presented papers to many societies, including the Institution of Gas Engineers and the Coke Oven Managers' Association, of which he was an honorary life member. At the time of his death, he was a member of the Livesey Professorship Committee of the University of Leeds and represented the Birkby Ward on the Huddersfield Town Council.

Mr. J. J. Priestley, Research and Development Department, W. C. Holmes & Co. Ltd., writes:

By the death of Mr. Charles Cooper, of Huddersfield, the gas industry has lost one of its outstanding figures, one who was better known by the older generation of engineers than by the younger men who accept the application of scientific principles to an industry as part of their everyday thinking. Charles Cooper was one of the pioneers who introduced this idea as something quite new into the field which he made his own—the treatment of crude coal gas.

Graduated in chemistry

Cooper was born in Ashton-under-Lyne and graduated in chemistry at the University of Manchester. For two years he was a lecturer in organic chemistry at Salford Technical College after which he entered industry at Flimby in Cumberland. During the First World War he joined the firm of W. C. Holmes, of Huddersfield, with whom he remained until he retired in 1956, holding at that time the post of joint managing director.

One of his early studies was the problem of gas cooling and condensation, basing his work on that of Haug and Mason, which led to considerable improvements in practice. This was followed by an exhaustive investigation of mass transfer in counter-current and multistage washers, as applied to gas purification. Working with Harris of Taunton he initiated the Drigas process for the dehydration of gas by calcium chloride solutions, which became widely adopted in the industry. Benzole recovery on gasworks, which was then a novel idea, was initiated with Ben Thorpe at Huddersfield gasworks and developed to a remarkable degree which led to a joint process with the old G.L.C.C. of gas desulphurisation by oil washing. He initiated work on catalytic desulphurisation with Maxted and Marsden as long ago as 1937.

Approachable

Charles Cooper was one of the most approachable of men who never lost the common touch, despite his restless brilliance of mind. Men from all walks of life share with his family their great loss.

DRASTIC N.E.G.B. CHANGES

'Line' organisation will raise selling efficiency

THE North Eastern Gas Board is undergoing reorganisation. At a meeting of senior officers recently the Chairman, Dr. R. S. Edwards, outlined plans for a 'functional' or 'line' organisation, which has been described in an article appearing in the Board's *Quarterly Review*.

This indicates that the basic activities of manufacture, distribution and sales, together with the essential services such as accountancy, secretarial, legal, industrial relations and welfare will be controlled by Board Members in their executive capacity.

The Chairman himself will control sales, accountancy and legal services. The Commercial Manager and the six Group General Managers will form a team which will be free to go out for sales.

They will be supported by the sales managers, industrial engineers and coke officers with the district managers operating within their districts. The group general managers will supervise all activities except production and distribution.

The second line of control will be through the Deputy Chairman, Mr. G. B. Currier, O.B.E., and the Chief Engineer, who is also a Board Member, and they will carry responsibility for all engineering functions, coal and coke.

The Deputy Chief Engineer, while taking his share of responsibility for production and distribution will have as his basic duty all constructional work.

On the manufacturing side there will be a Production Engineer, who will have three divisional production engineers to assist him. The larger works will have works engineers as at present, while in the smaller districts where manufacture is still being carried out the district manager will continue to supervise this aspect.

There will be a Distribution Engineer, but owing to the nature of the area there will continue to be six group distribution engineers whose responsibility will take them 'right up to the meter.' They will have their local staff and the district manager in the smaller districts will continue to supervise the local gas supply.

The final line of control will be through the full-time Board Member who will look after all aspects covering personnel together with a number of other services.

The Chief Medical Officer, the Industrial Relations Officer and the Education Officer will all act under the full-time Board Member, very much as formerly. The Pensions Officer, who will still remain a member of the Chief Accountant's staff, will now operate through the full time Member, as will the Methods Officer, a comparatively new appointment in the Chief Accountant's Department.

Formerly, transport came under the Commercial Manager, but in order to relieve him for more extensive sales efforts, it has been decided to form a separate department under a Transport Officer controlled by the full time Member, who as formerly will cover meters and installations.

New appointments

Proposals so far detailed mainly affect senior officers. A number of new appointments have been created. Some staff employees must be affected in their duties and in their allegiance, but the Joint Staff Council has been appraised.

Although manual workers will not be directly affected by the reorganisation, their trade union representatives will in future have different channels of communication with the management on behalf of some groups of employees. The Area Joint Industrial Council is being kept informed of all developments.

As the new executives are appointed they are being brought into consultation with regard to later stage developments.

The object of the reorganisation is to weld a more efficient unit, particularly on the sales side, and to achieve this a relatively small number of employees will be called upon to accept changes in their duties and responsibilities.

A list of staff changes brought about by the North Eastern Gas Board is given in our 'Personal Notes' column.

West's Group of Industries

THE re-formation of West's Gas Improvement Co. Ltd., approved by the shareholders at their extraordinary meeting of March 31, has now been completed with the changing of the name of the original company to W.G.I., Ltd., its conversion into a non-trading holding company, and the registration of two new subsidiary companies.

The two subsidiaries are West's Gas Improvement Co. Ltd., and West's Works Ltd.

The Group, under W.G.I. Ltd. (West's Group of Industries), now consists of the following companies:

West's Gas Improvement Co. Ltd., Manchester (carbonising plant, mechanical handling plant, structural steel work).

West's Works Ltd., Manchester (general engineers, manufacture and erection).

West's Piling & Construction Co. Ltd., Harmondsworth, Middlesex (foundation specialists, piling and reinforced concrete construction).

West's (Manchester) Ltd., Manchester (coal preparation and materials handling).

Tully Engineering Co. Ltd., Newark (complete gasification plant, producers, automatic control units).

Each company will retain its own identity and freedom of action and existing trading arrangements will not be affected. The main purpose of the change is to enable the West's companies to operate more effectively in a wide range of industries, and by improved accounting control to offer better service and stable prices to the Group's clients.

This is a picture of Johannesburg's fifth and latest gasholder, now nearing completion. It has a capacity of 5 mill. cu.ft. and was built by Dorman Long (Africa), Ltd., to a design by Ashmore, Benson, Pease & Co. Africa (Pty.), Ltd. When completely full, the holder will tower more than 200 ft. above the gasworks. The diameter of this spiral-guided, four-lift holder is 212 ft., and more than 2,300 tons of South African-made steel went into its construction.

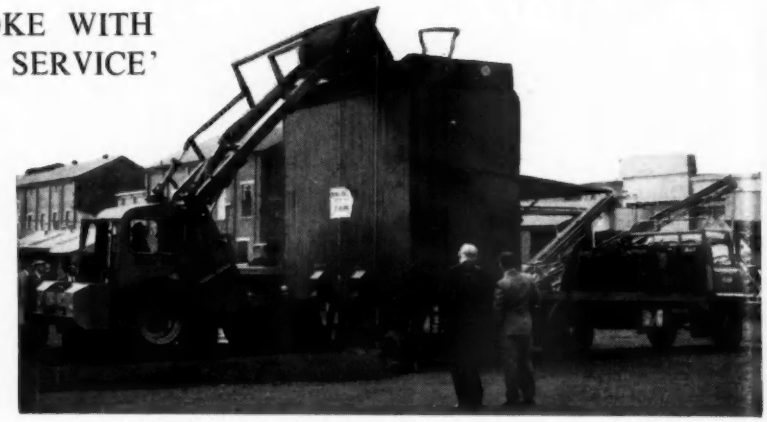
Common aim of producers and distributors

'BEST POSSIBLE COKE WITH BEST POSSIBLE SERVICE'

A DESIRE for closer co-operation between coke producers and distributors was shown recently by the initiative of the Southern Gas Board in inviting the coke distributors, and their ladies, in the Board's area, to a 'Coke Distributors' Day' at Poole gasworks.

Welcoming the guests, Mr. A. F. Hetherington, Deputy Chairman, said he was convinced that both producer and distributor had a common aim, which was to ensure that the public got the best possible product backed by the best possible service. This was uppermost in their minds and the Board had invited them to see for themselves how seriously it took the production and preparation of coke. Everything was done to make available a first-class smokeless fuel.

The Clean Air Act gave a tremendous opportunity to expand the market for such fuels, and the Board would do its best to have the right product available so that gas coke could make its own particular contribution to the development of smokeless zones.



Shown at the handling plant exhibition on 'coke distributors' day' was this Muirhill 2WL Supalift hydraulic loader with a bucket capacity of 1 cu. yard and a maximum working height of 16 ft. 3 in.

While the ladies toured the Poole Pottery works, their men folk listened to three short talks. Mr. W. F. Thorne, Chief Chemist of the Board, spoke of the processes by which coal was converted to coke and how the different types of plant working at different temperatures could affect the final product. As far as possible, by the strict scientific control of the coal charged and the running of the plant, the standard of the coke was kept constant within fairly narrow limits.

Mr. H. L. G. Boot, Chemist-in-Charge, Central Laboratories, spoke on the control of coke quality and referred to the British standard about to be issued, on a draft copy of which the quality of the coke produced by the Board was based. He explained some of the difficulties met with in sampling and the great care taken in bringing the samples to the central laboratory where they were analysed by specialist chemists using special apparatus.

In this way it was possible to keep track of any trends that might be developing in qualities of coke made at a

(Continued on p. 31)

Mr. A. F. Hetherington, Deputy Chairman, welcomes the visitors to Poole. From left to right are Mr. T. E. D. Mason, Secretary, Mr. Parsons, a member of the Distributors' Committee, who later proposed the vote of thanks to the Gas Board, and Mr. Bourne, a member of the Distributors' Committee and also General Manager of the L.C.C. Distributors' Association, with Mrs. Bourne.

Left: *Visitors watch a Charrold Multi-purpose vehicle in motion. This is fitted with automatic weighing machine, sack lifting arms, built-in conveyor and automatic weigher. It has a total capacity of 315 cu.ft. The bags are also counted as they are filled.* **Right:** *Novo-pak King weighing/bagging/conveying units for paper bags supplied by C.P.C. Southampton. The coke passing along a conveyor is weighed as it is fed into the bag. On the lef is a Fischbein portable bag closer with a capacity of 60 bags per hour. It was difficult to draw the visitors away from this demonstration.*

BOARDS REVISE TARIFF SCHEMES

North West: Incentives to use more gas in the home

THE North Western Gas Board are replacing their block tariff with a new all-purpose block tariff applicable to all customers, domestic, commercial and industrial, and they are introducing in addition two optional two-part tariffs for domestic customers only which will offer an incentive to use more gas by drastically cutting the price of additional gas used for household purposes.

Under the present tariff credit consumers pay 22½d. per therm for the first 65 therms of gas used per quarter, 20½d. per therm for the next 1,235 therms and so on at reduced prices as greater quantities of gas are used. For prepayment consumers there is a special rate of 23½d. per therm under the existing tariff.

Average householder

Under the new block tariff credit consumers will pay 30d. per therm for the first six therms of gas used per quarter, 24d. per therm for the next 94 therms, 20½d. per therm for the next 400 therms and so on at reduced prices as the quantity increases. The metering charge of 2s. per quarter will be retained for credit consumers and as in the existing tariff will be covered by a supplemental charge of 1d. per therm charged to prepayment consumers. Prepayment consumers will, thus, pay 31d. per therm for the first six therms, 25d. per therm for the next 94 therms and 21½d. per therm for the next 400 therms and so on.

This new all-purpose block tariff becomes effective immediately after the next reading of the meters after August 3, but householders can elect to be charged under one or other of the two new optional two-part 'incentive' tariffs as from that reading.

The first of the incentive two-part tariffs is framed to suit the average householder. It carries a standing charge of 13s. a quarter, including metering charge, and offers all gas used at 19½d. per therm (20d. per therm for prepayment consumers) which is 3d. or 3½d. per therm, respectively, cheaper than under the present tariff.

Potential customers

The second optional two-part tariff is designed for householders who consume a fairly substantial quantity of gas but are still potential customers for central heating and other forms of space heating and for hot water heating by gas. This tariff carries a standing charge of 39s. a quarter (including metering charge) and offers all gas used, either by credit or prepayment consumers, at 15d. per therm which is 5½d. per therm cheaper (8½d. per therm cheaper for prepayment consumers) than under the present tariff.

The existing special central heating rate of 18d. per therm is retained but householders who use enough gas under the second two-part tariff will in effect pay only 15d. per therm for their central heating or hot water.

The prices given above apply to the Board's standard price zone in which 95% of its customers are located. Just as there are now, there will be four price zones outside this main zone.

The price differential in these outer zones will be unchanged but in each zone the effect of the new tariffs will be the same as in the standard zone. Broadly this effect will be to:—

(1) Make cheaper by 3d. per therm (3½d. for prepayment consumers) the price of all 'additional' gas used by householders who consume 21 therms or more a quarter.

(2) Make cheaper by 5½d. per therm (8½d. for prepayment consumers) than it is at present the price of all 'additional' gas used by householders who consume 71 therms or more a quarter.

(3) Increase the average householder's gas bill by about 5½d. a week, where advantage is not taken of the alternative tariffs. (Average household use is 96 therms a year or 24 therms a quarter.)

(4) Place the smallest users, who have been supplied at a direct loss in the past, on a price basis which reduces this loss: (Those who use only six therms of gas a quarter will now find that their gas bills are 3½d. a week more.)

The new tariffs are designed to give a big inducement for additional sales to householders by the offer of dramatically cheaper prices for additional gas usage above present average use.

Mr. D. P. Welman, Chairman of the Board, said recently that the Board last year for the first time in seven years incurred a loss estimated at just over £½ mill. For the current year, on the basis of the existing tariffs, an estimated loss of £1.9 mill. would be incurred because of substantially increased basic costs including national awards and the worsened trading position arising from recession in industry in Lancashire and the North West.

The price changes under the new tariffs are expected to increase business and the Board's revenue by £1.6 mill. in a full year leaving an estimated deficit of £300,000 which the Board will endeavour to make good by yet again increasing productivity, but Mr. Welman added that if the new tariffs are fully successful and sales of gas materially increase he hoped to be able to offer further price advantages to all the Board's consumers.

Scottish: Raising cash to make future supplies cheaper

THE Scottish Gas Board introduced a new tariff structure from Monday last for domestic consumers using the average amount of 24 therms a quarter. The new rates will mean an increase of 6d. a week.

Long stability

Although the price of gas in Scotland has remained stable for the past two years, continued rises in charges and the need to invest in the development of improved services and of new sources of supply, which will eventually produce large quantities of gas more cheaply than can be done at present, have made it necessary for the Board to seek additional revenue.

The tariff is a development of the system of charging introduced two years ago, when the price of gas was made universal throughout Scotland. At that time, an optional domestic two-part tariff was introduced, whereby upon payment of a quarterly standing charge, consumers could get all their gas at half the price of the standard rate. This tariff benefited all consumers who used over 51 therms a quarter. Under the new tariff structure, all domestic consumers who use 33 therms a quarter or more will benefit using the optional domestic two-part tariff. This means that over 200,000 consumers will now qualify for half-price gas.

The new tariff structure offers for the first time the benefits of an optional two-part tariff to commercial and industrial consumers, the capacity of whose meters does not exceed 400 cu.ft. an hour. For commercial and industrial consumers with larger meters, a revised block tariff has been introduced which offers a new low rate of 14d. a therm where very large quantities of gas are consumed.

Two-part

The block tariff for domestic consumers has been replaced by a standard two-part tariff with gas at 30d. a therm, or 1d. a therm more than the present first block price of 29d., and a fixed standing charge of 4s. 4d. a quarter for domestic credit consumers and 6s. 6d. a quarter for prepayment consumers.

On the optional domestic two-part tariff, the price of gas has been increased by ½d. a therm and the standing charge from 39s. to 45s. 6d. a quarter for domestic credit consumers, and from 41s.

(Continued on p. 32)

Gas staff pay keeps pace with living costs

NALGO CHIEF TALKS OF DEADLOCK ON DIFFERENTIALS

WITH the recent rise of £10, £15 and £25 for grades 10, 11 and 12 respectively, administrative, professional and technical gas staff pay has kept pace at all points but one with the rise in the cost of living since 1950. The only exception is the top of grade 12.

This striking point was made by Mr. G. W. Phillips, NALGO's organising officer for gas staffs, when he spoke at the customary meeting of gas members on the eve of the Association's annual conference, held this year at Scarborough.

Junior scale

During the past year, Mr. Phillips said, NALGO had played its full part in securing, through the Staff Side, a cost of living increase (ranging from £8 to £36) for gas staffs. This had been followed by corresponding rises for intermediate grade employees and by a revision of the national salaries table for senior gas officers. The Staff Side, of which Mr. Phillips is Secretary, had also succeeded in gaining long-sought improvements to the junior staff scale.

On the debit side, however, deadlock had been reached in the National Joint Council on the long-outstanding claim for restoration of differentials. The rises already mentioned for grades 10, 11 and 12 were in no sense a settlement of that claim, but rather a 'tidying up operation.'

'The Staff Side will have to consider carefully what further action to take over the differentials claims,' said Mr. Phillips, 'but we must recognise that NALGO's deliberate policy has been to secure the biggest improvements for the lower-paid staff in the industry—for those on grade A/B, for example, who include many young family men.'

Turning to the Gas Council's proposals for new provisions for compensation for staff made redundant (to replace the gas staff compensation regulations which expired on April 30, 1959), Mr. Phillips said that NALGO and the Staff Side had made it clear that they considered these quite inadequate as they stood—indeed, no agreement at all might be better. There was some hope that the Gas Council would now amend the pensions schemes to enable pensions in certain circumstances to be 'frozen.' If that was done, their compensation proposals might at least form a basis of discussion.

NALGO did not, of course, regard compensation as the answer to redundancy.

Avoiding redundancy

'We have always said,' Mr. Phillips reminded the meeting, 'that the industry must bend itself to avoiding redundancy altogether. Compensation is not a satisfactory substitute for that. Nevertheless, if a person is redundant, he must be looked after, and his accrued pension rights must be safeguarded.'

Mr. Phillips said that the members of NALGO's national service conditions sub-committee for gas—most of whom were on the platform with him—were reasonably satisfied that most area gas boards were dealing as fairly as possible with the redundancy danger—though there were one or two regrettable exceptions. NALGO was committed by a decision of its 1958 conference to seek a national agreement on redundancy, but meanwhile much could be done, and was being done, at area level.

Redundancy proved a major issue in the lively discussion which followed Mr. Phillips' review of the year, the respective advantage of national agreement and area negotiation finding forceful advocates. Members were more vocal than usual about the need for unity among gas staffs if they are to deal successfully not only with the problems of redundancy, but also with the whole field of negotiation and joint consultation.

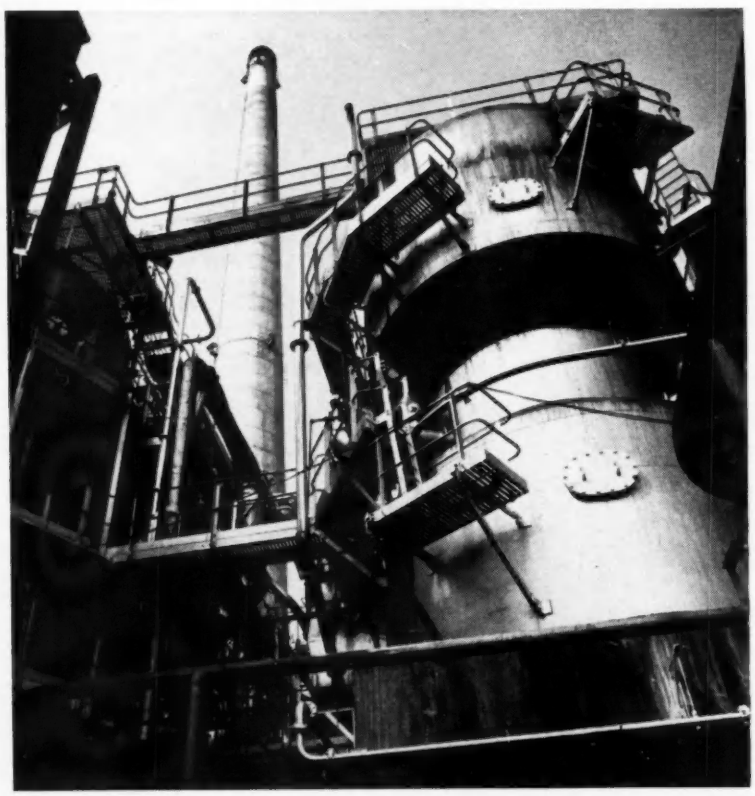
Met their needs

They were outspoken, too, in their view that NALGO, as a comprehensive union, was the trade union that best met their needs, especially at a time when comparison with other industries and services was so important a factor in setttling pay, pensions, and conditions of service generally.

One sign of this comprehensiveness at work could be seen in the able chairing of the meeting by Mr. E. J. Varley, a local government member of NALGO's National Executive Council, who is a member of its national sub-committee for gas staffs and also follows closely gas staff negotiations in his own north-eastern area. The meeting paid warm tribute to him, to Mr. F. Eade (chairman of the national sub-committee) and to Mr. Phillips.

'The gas industry, though it is nearly 150 years old and was, a few years ago,

Reactor at Southampton works



This striking photograph shows the catalytic reactor of the new reforming plant at the Southern Gas Board's Southampton works. The plant, which can reform refinery gas or oil into town gas, is already processing gas from the Fawley refinery. In the background can be seen the plant's 220-ft. chimney which is already a Southampton landmark.

regarded as becoming moribund, has taken on a fresh and more vigorous life,' said Mr. A. E. Nortrop in his presidential address.

'Streamlined, experimental, and enterprising, it is marching to a prosperous future. Who, ten years ago, would have dreamed of the developments it is pioneering today with its new organisation, new methods, and new appliances? For these achievements NALGO members could take some credit; in improving administration, in welcoming and developing new methods, in increasing output and performance, they had met every call made upon them. The association too had played a major part in developing the service; it had taken the lead in bringing into being from scratch national negotiating machinery, in making it work, and improving conditions for the staff in a period when, all over the world, the status, prestige, and financial rewards of non-manual labour had been declining.

For 12 years, Mr. Nortrop reminded the conference, they had been engaged in an endless race against rising prices and today many had fallen back from the points at which they had started. There were now signs of a change and if price stability was maintained it might mean that the era of the annual pay claim for an all-round increase was ending. The moderate tone of debate on salary issues showed that delegates shared their President's feelings.

Fuel policy

An unsuccessful attempt was made to refer back an executive report on a national integrated fuel policy. Last year's conference had wanted a royal commission to bring this about, but the executive reported that the government's policy was fundamentally opposed and that it was useless to pursue the idea. As Lord Mills had said in Parliament, they believed in 'maintaining a lively and proper competition between the fuels.'

The delegates equally declined to support the reference back of a report on compulsory trade unionism. In the report the executive maintained that NALGO preferred to rely on voluntary methods, not because it failed to recognise the anomaly of the acceptance of trade union gains by people who declined to join a union, but because they believed that compulsion would arouse controversy and be a less effective means of recruitment.

The subject of recruitment to the Association aroused a debate on methods of attracting young people; Mr. C. R. Gibson (Bristol Electricity branch) advocated the use of new devices. The National Union of Bank Employees, he said, staged hair-demonstrations as an attraction at meetings for women. In Bristol they were having talks on jazz or a sportsmen's forum so as to interest young potential members.

Accident off duty

The sick pay scheme of the National Joint Council for Gas Staffs contains a provision that payment of an employee following an accident off duty shall be at the discretion of the employing authority. In other fields of employment payment is made without question as in respect of sickness. The executive committee thought that in practice payment was made, and they opposed a motion calling for the repeal of this condition. The conference rejected their advice, however, and passed a motion in this sense.

A motion from South Wales sought the support of conference in resisting the extension of Saturday afternoon working in gas and electricity. In view of the growing number of employees in other industries enjoying a five day week this was described as an 'unfortunate development.' The executive committee spokesman opposed the motion on the ground that these services were conducted on commercial principles, that they must conform to normal shop practice, and that this could increase sales and incidentally keep staff in employment. The conference rejected the motion.

The conference noted the introduction of a Bill to raise the permitted increase to the pensions of former public employees and received the executive committee's report on measures which had been and were being taken to induce the government to make these improvements as generous as possible. The executive council also reported that they were watching the course of the National Insurance Bill and would be circulating a statement on the advisability of contracting out of the provision of the Act when it was on the statute book in respect of all or any of the services covered by the Association.

From a wide range of domestic issues which the conference debated the following are some examples. The machinery of the association has been reviewed and found to be effective; in order to enhance the value of the work of district committees branches are urged to ensure that they are represented at all district meetings; those who, without an acceptable excuse, do not attend will be disfranchised and prevented from sending delegates to the annual conference. The Cayton Bay holiday camp, which was to have been sold, is to be retained and modernised so as to be placed on a sound financial footing.

Executive tasks

The executive council have been charged with a variety of tasks for the ensuing year. Among these are to develop the association's public relations policy and to seek the creation of a national joint public relations committee with local authority associations; to consider the establishment of a local government administrative staff college; to consider setting up a confederation of non-manual workers (presumably the existing National Federation of Professional Workers will be included in the scope of this review); to try to obtain a safety code for staff exposed to radiological hazards; and to examine the future employment situation in the light of the population bulge and the falling off in the number of people employed; and mechanisation and automation.

Coke distributors' day

(*Continued from p. 28*)

number of works. These could be controlled and brought nearer to the prescribed standards.

Mr. J. Darby, Aga service manager, described the principles on which the Aga cooker and Agamatic boiler worked and how his firm always recommended coke as the best fuel for both of them.

The cooker was largely unaffected by the grading of the fuel used in it, since it was a constant temperature heat accumulator and could burn fuel at constant rate for long periods irrespective of the cooking load.

The Agamatic boiler, however, needed a fuel graded to the demands of hot water made upon it.

In winter when used for space heating as well as hot water supply, No. 2 coke was satisfactory, but in summer when hot water alone was needed and the fire burning at its lowest rate, No. 3 coke would prevent the risk of the fire going out.

A demonstration of coke handling plant, of special appeal to distributors, had been arranged by Mr. H. M. Lawrence, the Board's Material Handling Officer. This included plant for filling coke into paper bags and a special quick sewing device, various portable belt conveyors supplying coke to portable screening and bagging plants and a number of mechanical shovels for recovering from stock.

The most noteworthy of these were the Michigan 75a tractor shovel of 2¼ cu. yards capacity, the Stanhay Shovelall, by means of which wagons may be unloaded through the side door, and the Neal Pelican loader in which a hydraulically operated grab mounted on a tractor unloads a wagon from ground level.

After a buffet lunch, the guests spent a most enjoyable afternoon cruising on the Dorset Lakes.

'Highland' caterers chose gas

GAS was the fuel chosen by all five official caterers at the Royal Highland Show at Aberdeen. The Aberdeen District of the Northern Division of the Scottish Gas Board laid about 3½ miles of pipe at the Hazlehead site.

Northern officials started planning for the Show nine or ten months before it was opened and the work of laying the mains and pipes began about four weeks before the show began. As Hazlehead is not a permanent site all the pipes were removed at the end of the show and will be used again.

The official caterers used 172 cooking and other appliances, the majority of them hired from the Scottish Gas Board.

Southern sales of gas rise—industry now takes 12½%

PROGRESS BULLETIN FOR CONSULTATIVE COUNCIL

TOTAL sales of gas by the Southern Gas Board went up by 1.2% during the quarter ended March 31 last. In their bulletin to the Consultative Council the Board say that while the biggest increase was in sales to industrial customers, the domestic figure also improved.

The bulletin continues: 'The steady upward trend in industrial gas sales reflects the efforts made by the Board over the last few years to encourage the application of gas to industrial processes of all kinds. Industrial gas sales now represent some 12½% of all gas sold and it is expected that this proportion will increase. The Board have received many written expressions of appreciation of the valuable help given by their industrial engineers.'

The introduction of an optional domestic two-part tariff from January 1, 1959, stimulated public interest in gas fires, gas-fired central heating boilers and warm air circulating systems. All customers likely to benefit by adopting the new rate are being individually advised so that they have the fullest information and are aware of all the implications of the new arrangement.

Quicker service

Sales of major domestic appliances during the quarter were 15.8% up on the same quarter of 1958. Main increases were in cookers (+28.3%), fires and radiators (+24.0%), water heaters (+5.1%), washing machines and refrigerators. All showrooms are now stocking loose parts for cookers and customers are being invited to bring in for exchange defective grill frets, grids, etc., thus giving a more prompt service with savings in transport and fixing costs.

The Board report that the situation throughout the area with regard to services requiring relaying and complaints of choked services has been generally improved. The net increase in new services during the quarter was 2,204. Services re-laid totalled 3,223.

Care of elderly

Since the work of examining gas installations in the homes of elderly people living alone started, some 15,550 such installations have been checked by the Board; 1,050 examinations took place in the quarter under review.

Sixteen miles of main were laid during the quarter. The total length in use at March 31, 1959, was 5,829 miles.

Virgin naphtha is being used by the Board for gas making to the maximum extent possible. It was used at Hilsea works during the quarter, while Poole works received its first deliveries at the end of the quarter and has since operated its c.w.g. plant on this fuel.

At Southampton good progress was made on the foundations for the dry gas plant and the virgin naphtha installation was completed. At Reading one of the two sets of the new Segas plant operated with the plant cold; the brickwork has been dried out and the pumps and blowers tested. In addition, the relief holder was made ready for testing and the dry gas plant foundations finished.

Increased capacity

There are now 135 gasholders working throughout the area with a total capacity of 75.48 mill. cu.ft.—an increase in average capacity of 559,000 cu.ft. compared with April, 1956, when 196 holders were in commission.

The Board's house magazine *Flame* received an Award of Excellence, and sales and service newspaper *Southern Service* a Certificate of Merit, in the 1959 Competition organised by the British Association of Industrial Editors.

BOARDS REVISE TARIFF SCHEMES

(*Continued from p. 29*)

to 47s. 8d. a quarter for pre-payment consumers.

For commercial and industrial consumers with meters up to 200 cu.ft. an hour capacity, the domestic tariffs will apply. For those with meter sizes over 200 cu.ft. and up to 400 cu.ft. an hour capacity, a similar optional two part tariff will apply with a standing charge of £3 18s. a quarter.

Block Tariff

A block tariff is retained for non-domestic consumers with meter sizes over 400 cu.ft. an hour, and the quarterly consumption charges have been revised as follows:

First 33 therms, 30d. (previously 29d.)
Next 1,230 therms, 21d. (previously 19d.)
Next 15,000 therms, 17½d. (unchanged)
Next 500,000 therms, 15d. (unchanged)
Above 531,000 therms, 14d.

North Eastern: Price goes up, but big users to pay less

THE North Eastern Gas Board is to increase by 1d. the price of gas on the first two blocks of its general purposes tariff and eliminate the settlement discount of 2½% on all gas charges.

In a statement prepared by the Chairman, Dr. R. S. Edwards, to the Area Consultative Council meeting yesterday, the introduction of an optional tariff to non-domestic consumers, consisting of a standing charge of £5 per quarter and all gas at 15d. per therm, was also announced.

Provided that these proposals could become effective at the beginning of September, the statement said, the overall financial effect should be to increase the net revenue of the Board by £240,000 in 1959-60 and produce a surplus of £40,000 and in 1960-61 by £30,000 to give a surplus of £70,000.

The new general purpose tariff will have quarterly charges as follows:

First 20 therms, 29d. (previously 28d.).
Next 1,230 therms, 19.5d. (previously 18.5d.)
Next 11,250 therms, 16.25d. (unchanged)
Excess therms, 15d. (unchanged).
For prepayment consumers, an additional 1d. per therm on the first 20 therms.

The increases mean, for consumers with ordinary meters, an additional charge of 6%, or 3d. per week, while consumers with prepayment meters will pay an extra 3½%, or 1½d. per week. The average domestic consumption is about 90 therms per annum.

For 45,000 of the 52,000 non-domestic consumers, the increase will vary from 6% to just under 8% for annual consumptions of up to 900 therms. The remaining 7,000 will be able to offset the increase by adopting the proposed two-part tariff. Those consumers taking 1,300 therms per annum, says the Board, will be paying less than they do at present.

New Zealand orders plant from W-D

WOODALL-DUCKHAM (AUSTRALASIA) PTY. LTD., a member of the Woodall-Duckham Group of Companies, has received an order valued at over £A400,000 for a new continuous vertical retort installation to be built at Dunedin, New Zealand, for the Dunedin Gas Department.

The plant, which will be capable of producing 1,670,000 cu.ft. of 475 B.t.u. gas daily, will comprise 20 62-in. lambent heated retorts arranged for an extension at a later date to 26 retorts, a coal mixing and handling plant with a coal mixing hopper, a coke screening and storage plant, a waste heat boiler large enough for the extended plant and a Schneible dust extraction plant for the wet recovery of dust from the dischargers.

History in the making

A party of members of the Société Jersiaise, the main historical and antiquarian society of the island, visited the works of the Jersey Gas Company recently. They were met by Mr. Stuart Pepin, the Managing Director, and were shown the gas-making process, the new sulphur removing plant and the testing of gas in the laboratory.

From a paper to the East of Scotland Junior Gas Association, Aberdeen, March 31.

The Elgin to Cullen Integration Project

By S. R. McCRAE,
NORTHERN DIVISION, SCOTTISH GAS BOARD.

IN anticipation of obtaining Board authority to carry out the linking up of Elgin, Buckie and Cullen a strip negative on the scale of 6 in. to one mile was traced from the Ordnance Survey maps, the width of the strip indicating land up to ¼ mile on either side of the likely route, and a preliminary site survey was made of the likely route, together with any possible alternative routes. The chosen route was then plotted on prints of the strip plans. This survey was carried out on foot and notes taken of (i) existing crops, (ii) railway track and railway bridge crossings, (iii) road bridge crossings, (iv) burn and stream crossings, (v) culverts and sewers, and (vi) the soil types likely to be encountered.

The project was divided into two sections; section 1, the Findochty to Cullen pipe-line which would replace the existing 5-in. steel main supplying Portknockie and Findochty from Cullen works by a 6-in. diameter spun iron pipe, and section 2, the Findochty to Elgin pipe-line in 8-in., 10-in. and 12-in. bolted gland main.

At this stage Board authority was given to commence the project of laying the integrating main from Elgin to Cullen via Buckie, as a result of which Buckie and Cullen would cease as manufacturing stations.

Planning Permission

Orders for 6-in. screwed gland and 8-in. bolted gland pipe and specials were then placed and formal submission for permission under the Public Utilities Street Works Act, 1950, was made to carry out mainlaying between Buckie and Cullen to the parties concerned. Strip maps, scale 1/2,500, were supplied showing the proposed route. Formal submission was made to the Banffshire County Planning Officer for planning permission for the external bridge crossing to be made at Cullen and wayleaves were requested from the British Transport Commission in respect of one bridge crossing, one railway track crossing and one disused track crossing. Wayleave negotiations were also started with the owners of the land through which it was proposed to lay the main between Buckie and Cullen.

In all cases permission was obtained from the landowners to string and lay mains pending completion of the formal wayleave documents, with the exception of the British Transport Commission. This appeared to be an excellent arrangement but the tenant farmers preferred to harvest their crops before allowing entry. Compensation for loss of crop provided little inducement. The tenants of the Cullen golf course, through which the new 6-in. main was routed, understandably refused permission to allow entry until September. Since work was to commence in May the availability of ground for mainlaying was limited and it was decided to start with one mainlaying squad only. A further squad would be started in August when the new digger would be available for use on this project and a start would be made to the harvesting of hay and other crops.

Pipes were loaded manually from railway wagons arriving at Cullen on to a hired lorry as no suitable outdoor crane was available at Cullen railway station. Occasional difficulty was experienced due to the manufacturers sending 'six board high' wagons, instead of the conventional 'five board high' pipe wagons. This was soon remedied on request being made to the manufacturers.

Where the main was to be laid in fields and permission to string was obtained, the pipes were strung out as close to the fence line as possible; but where no permission to do so was obtained, they were strung out on the nearest road verge, or in suitable dump sites for which permission had always to be negotiated.

Where the main was to be laid in the road verge and it was wide enough to accommodate both the pipe and the digger, the pipe was strung out on the road verge in which the pipe was to be laid; but if the verge was not wide enough the pipes were strung on the opposite road verge.

Where the main was to be laid in the carriageway or in footpaths, the pipes were always placed in a suitable dump site, and only sufficient for one day's excavation was strung out in advance. Occasionally certain justifiable limitations were imposed by the road authorities at bad bends in the roadway or on roads carrying heavy traffic. The limitation was usually a restriction to 50 yards of open track at any one time.

Excavation

With the exception of a few road sections in which there were numerous obstructions, and a very narrow road verge, all the excavation work was carried out by a Whitlock Dinkum Digger mounted on a Ferguson diesel tractor. The digger unit hydraulically operated a standard 18-in. wide bucket which was fitted with manganese steel teeth. Experience in its use had been gained during the Inverurie/Oldmeldrum integration and it was considered that all the relevant facts were known regarding this machine, but this was soon proved untrue. Excavation was commenced one day in front of the mainlaying squad, and wherever possible this was maintained in order to prevent any delay due to any possible breakdown of the digger. Findochty Moor was the section in which excavation work started and the ground here consisted of 6 in. of peaty soil on top of hardpan. With the digger working nine hours per day an average of 80 yards per day was excavated at a depth of 2 ft. 9 in., in spite of the extremely hard soil conditions.

The rate of excavation to be obtained in normal cir-

cumstances from this machine in an eight-hour day, digding 3 ft. deep with a track width of 18 in. was 120 to 160 yards in light soils, 100 to 120 yards in medium soils and 80 to 100 yards in heavy (not clay) soils. A special clay bucket is available for working in clay soils. Road verge work may reduce these figures by as much as 20%, depending on the available width of the road verge. The length of track excavated by this type of digger in the roadway was usually about 60 to 80 yards per day depending on soil conditions and the number of obstructions encountered. Few records were available, with the exception of the G.P.O. engineering department, to assist in the location of these obstructions and in many cases the local burgh foreman's memory was the only source of information.

The need to keep surfacing material, bottoming, and sub-soil separate was of paramount importance in roadwork, and since the digger could not separate easily the surfacing from the bottoming material it was decided to use pneumatic hammers to break all the road surface and to throw it clear by hand. So the breaking of road surfaces was carried out conventionally by pneumatic hammers, the compressed air being supplied by a Broomwade diesel compressor with a delivery rate of 60 cu.ft. per minute which could be towed by a 10-cwt. vehicle or digger fitted with a towing hook. It was found necessary, however, to obtain a 120 cu.ft. per minute Broomwade diesel compressor from Divisional Headquarters with two pneumatic hammers, since this was found necessary to keep the digger fully employed. Manual excavation had to be resorted to on occasions.

During the laying of the 6-in. diameter screwed gland main the bottom of the track was first cleaned to the required depth, the level being checked with an 18-ft. straight edge, one end of which was inserted into the socket of the last pipe laid. The fall on the straight edge was checked for run and the next joint hole was excavated.

Graphite Lubricant

The next pipe to be laid was rolled from its stringing position 3 or 4 ft. from the edge of the track on to two 7 in. by 3 in. wooden battens placed over the track. The spigot and socket were wiped clean and the pipe, gland and rubber were examined visually for defects, particularly the spigot end of the pipe and the lead tip of the rubber ring. Meanwhile the wire cable of the pull-through, which was in the last pipe laid, was hooked on to a 26-ft. length of galvanised fencing wire and pulled through the pipe to be laid. Graphite was smeared on the threads of the gland and the canvas backing of the rubber ring. Two ropes were then passed under the pipe and then crossed over the pipe; the strain taken, the battens removed and the pipe lowered gently to the bed of the track. Care was taken not to allow any dirt to fall on the graphite lubricant.

Only after making the joint tight was any necessary deflection made. A check was always made after deflecting a pipe to see that the exterior face of the pipe was clear of the inner circumference of the screwed gland, otherwise over-deflection might have taken place causing the joint to leak.

All horizontal bends were anchored with mass concrete poured between the 'area of pressure' of the pipe and the firm bank of the track. All vertical bends were also encased with mass concrete, the overlay round the pipe being 9 in. thick on top and 12 in. underneath. The retaining weight was thus supplied by the weight of the concrete and the earth backfill. All straight pipes laid in gradients of 1 in 4 or greater were anchored by pouring two mass concrete anchor blocks per pipe length as for vertical bends.

The backfilling of pipes was carried out initially in four stages which consisted in the packing of the pipe manually with a covering of soft earth to provide a minimum cover of 12 in. and hand ramming; infilling the remaining subsoil by an angle dozer fitted to the digger while the top soil was replaced manually; consolidating the backfill by running the digger wheels down the track, and after an interval of from four to six weeks to level the reinstated track using the angle-dozer.

Economic Necessity

It was found this method of backfilling was by no means perfect, so to release the Dinkum Digger, a machine for backfilling became an economical necessity, and a rubber tyred Fordson 'County Fourdrive' diesel Major tractor with clutch steering, fitted with a hydraulically operated Bray-dozer for bulldozing and angle-dozing, was purchased. This machine could backfill the top soil and give a better compaction to the track since it was far heavier and only needed the assistance of one labourer for 'finishing' the track. When backfilling for only two squads the bulldozer was only employed fully two days per week. Therefore, a hydraulic digging unit with an 18-in. and 23-in. bucket was purchased.

This digging unit would be easily attached or removed from the bulldozer on the site, and would be capable of digging a single track for pipes up to 12 in. diameter. It would also cause the minimum damage to tarmacadamed road surfaces at either side of the track being excavated. The most suitable digging unit then available was a 'Shawnee Scout,' but its excavation rate in practice was found to be much poorer than the Dinkum Diggers. It was, therefore, used for road excavation, and acted as a standby to the other two Dinkum Diggers. It was now possible to operate two field mainlaying squads and one road mainlaying squad and thus step up mainlaying progress on the whole project.

This main would be ultimately operating at approximately 13.5 p.s.i. and the mains were, therefore, tested at 50 p.s.i. Since this was a new procedure for our pipelayers, each one was trained and supervised by the technical assistant until all were completely familiar with the procedure.

The precautions taken during pressure testing were as follows:

1. All anchorages, including bends, tees, and pipes laid on a steep gradient were checked by the technical assistant.

2. The whole length of the track to be placed under test was examined by the pipelayer to see that all pipes had been packed. No workmen were allowed near the vicinity of the track, especially at anchorage position.

3. No inspection was carried out of the main during the pumping-up process.

4. No attempt to tighten up glands was allowed to

be made during the time the main was under pressure.

5. The test pressure must never exceed 60 p.s.i. since the high pressure syphons were certified to only that pressure.

While working a five-and-a-half-day week the sections of mains laid during that week were placed under test on either the Saturday morning or afternoon, according to the number of sections to be tested, the tests being taken off on Sunday afternoon. Pressure recordings were taken over 24 hours. While working a five-day week it was sometimes necessary to place a section under test on a Friday night in addition to the Saturday morning, but no work was carried out on the Saturday afternoon. The testing team started work on Sundays at 10 a.m. and the pressure recorders examined by the mains and service layer. On those sections which were obviously leaking, the task of the team was to soap each joint and to try and locate the leak. Soaping of each joint was not found to be a particularly suitable method with either screwed or bolted gland pipes since it was found necessary to completely fill the circular space between the body of the pipe and the gland before a leak could be indicated. It was later standard practice to 'blow-off' a suspect section of main, insert ethyl mercaptan, blow up to test pressure and then to try to locate the leak. Since this was done on the Sunday, repairs were carried out on the Monday and a further test applied when the suspect leaks had been repaired. No attempt should be made to joint up one section to another until the first section has been proved tight. If in spite of using ethyl mercaptan the leaks had not been located then carbon tetrachloride was introduced into the main and pumped up to test pressure. The location of the leaks was then carried out by the technical asistant using a battery-operated halogen leak detector which, in this particular case, proved very successful when in good working order. It must be realised that the halogen leak detector can only be used once on any particular section of main under test since it will pick any joint which has been leaking and subsequently repaired even after up to two weeks has elapsed.

Reinstatement

Little site clearing was needed prior to commencing work on the 6-in. diameter main between Findochty and Cullen since no entry could be made until crops were harvested. Thus the only reinstatement necessary was to repair fences and drains (which ought to be done during mainlaying). Further levelling of top soil by bulldozer was carried out in fields planted with first- or second-year grass after two months settlement of the soil had occurred in order to make hay cropping during the following year easy for the farmers. It was unnecessary to level off third year grass fields since they were scheduled to be ploughed in the following year. Every attempt had been made during backfilling by bulldozer to ensure that all stones were placed below ploughing depth. This aim was not always achieved and to remedy this the reinstated track in agricultural land was raked by a rake towed by the bulldozer and the stones thrown up cleared off the site and dumped in the nearest dump site. All boulders which had been too large to place in the track during backfilling were moved to the boundary of the fields and cleared at the end of the project in one operation. All spare material such as cut sections of pipe, etc., were cleared each time camp was moved, but it is considered that nothing less than personal inspection by the technical assistant will ensure that this work was done satisfactorily. Therefore, a final inspection on foot of the whole line was carried out by the technical assistant.

The length of new 6-in. and 8-in. main to be purged totalled 12,530 yards and the preliminary work required before purging commenced was to see that all the sections of the 6-in. and 8-in. main had been joined and the complete length of main pressurised to 50 p.s.i. and subjected to a final pressure test for 14 days; that the main was de-pressurised by opening all the cocks on the high pressure syphons to prove that all the syphons were clear and functioning properly; that the technical assistant had checked (a) that the syphons and valves were provided with a marker post, (b) that the syphons were clear of any condensate and in full working order, and (c) that the high pressure syphon cock was in the closed position after the main had finally been blown off.

Purging Operation

The actual purging with inert gas was then carried out after closing the isolating valve between the 6-in. and 8-in. section. A 3-in. diameter standpipe fitted with a wheel valve flametrap and sampling point was erected at the end of the 6-in. main at Findlochty and a purging machine connected to the 6-in. main at Cullen after the analysis of the purging gas had been passed as correct. The modified version of the Orsat's apparatus was used for this purpose. Periodic checks were made on the constituents of the inert gas from the purging machine to see that no carbon monoxide was being produced and that all the gas oil was being burned to produce carbon dioxide and nitrogen.

With the purging of the 6-in. and 8-in. mains completed with inert gas, town gas was then immediately introduced from the Cullen works and pumped to Findochty and Buckie, using an initial pressure of 80 in. w.g. which was available. Sufficient holder stock at Cullen had been ensured to allow the volume of town gas required for purging. At this stage both the old 5-in. steel main from Cullen feeding Portknockie and Findochty and the new 6-in. main (which continued to Buckie in 8-in.) were 'live.' High pressure services already existing between the villages were transferred to the new 6-in. main, any renewals being carried out where necessary. A high pressure Audco valve and service governor fitted with a mercury safety seal, set to blow at 6-in. w.g., were provided on each service taken direct off the grid main. At the outlet of each meter was fitted a diaphragm cut-off governor which closed when the inlet pressure fell to 2-in. w.g. and could only be reset manually when at least 2-in. w.g. pressure conditions had been restored and all taps on appliances were shut.

New 4-in. mercurial governors with 2-in. safety by-pass diaphragm governors (set to open at 1-in. w.g. pressure below the setting of the mercurial governor) replaced the existing governors at Portknockie and Findochty. With this work completed, then the old 5-in. steel main was purged by inserting a plug of nitrogen followed with compressed air. All open ends of the 'dead' main were plugged with wooden plugs wrapped with a protective material.

In carrying out section 2 of the project, that of laying

the main from Findochty to Elgin, via Buckie, Fochabers, Mosstodloch and Lhanbryde, the work done on the 8-in., 10-in. and 12-in. bolted gland main section was similar to that finally adopted with the 6-in. screwed gland main. There were, however, certain legal difficulties over wayleaves and the granting of consent to lay main under the Public Utilities Street Works Act 1950.

In this area the Crown Commission refused to allow permission even to string out pipes until the formal legal wayleave negotiations had been concluded, although agreement to the required wayleaves in principle had been previously obtained. Permanent 'sterility' widths of 10 ft. were negotiated in the wayleave agreement drawn up with the Forestry Commission in order to prevent tree roots causing damage to the main, the main being laid in the centre of the 'sterility' strip.

A condition imposed by the county road surveyor of the combined counties of Moray and Nairn was that wherever the main entered into the width of a proposed road widening scheme—which incidentally stretched from Elgin to halfway between Fochabers and Buckie—the main should be laid with a minimum cover of 3 ft. below the proposed road level. This condition was accepted, but in addition an attempt was made to have the main laid in future road verges. When this proposal was studied in detail it was realised that although a future road verge was a theoretically ideal position for a gas main, numerous deep cuts would have been necessary in order to lay at the correct cover for the proposed road widening. After many discussions, the outcome was that where no extra excavation was required and the main was laid in future road verges at 3 ft. minimum cover.

Site clearing of the forest section in which the 10-in. main was laid was a different proposition to what had been previously encountered. Each squad working in this section was equipped with a large bow saw with spare blade, a woodsman's axe and a bill hook which was used for light clearing. The Forestry Commission, who owned this forest, co-operated on the site extremely well. The need for completing the project before a certain date had arisen and it was decided that two further mainlaying squads would be required. Two more diggers and a bulldozer would have been necessary and as future commitments beyond this project did not warrant more equipment than already owned, it was decided to employ a contractor to excavate, backfill the track, and handle the pipe between Fochabers Bridge and Lhanbryde. Mains and service layers and assistants and one labourer were supplied to lay and joint the pipe. It should be noted that the contractor lowered the pipes into the trench, the pipes being floated, levelled and jointed by Gas Board labour.

All work on bridge, stream, burn and culvert crossings with the exception of Spey Bridge and Cullen Bridge were carried out by direct labour. On one stream crossing the services of two frogmen had to be obtained! All exposed mains on bridges or over streams were laid using steel pipe phosphate descaled and internally coated with red lead, with welded on flanged joints. The only exception to the use of flanged steel joints was on Spey Bridge. Here Viking-Johnson flexible couplings with central registers were used on straight sections, bends being 'tailor made' and the joints welded. Viking-Johnson couplings would have been useless at bends since they would have opened up under pressure. It is essential when using this type of coupling to ensure that the ends of the random lengths of steel pipe have been rounded by the manufacturers, otherwise a good joint cannot be made. Spun iron mains laid under streams or burns were given a concrete overlay if the cover was less than 12 in.

'Industry Needs 10% Technologist Employees'

OUT of 24 mill. employees in Britain, 20 mill. of them working full-time, 38% were employed in manufacturing industries in all of which greater productivity can be expected from automation. This was stated by Mr. J. F. Coales, O.B.E., in his presidential address to the Society of Instrument Technology.

It was probable, said Mr. Coales, that the best estimate that could be made was to assume that a large part of British industry needed to have 10% of its employees fully qualified technologists as soon as possible, and therefore that, of the 12 mill. persons employed in industries dependent on technological advance, at least 5% of the fully employed, or 500,000 needed to be qualified technologists now.

As the area in which automation was applied increases, so the numbers employed would inevitably change, so that when the industries had been modernised the total labour force employed would probably continue to be about 10 mill., while the amount of goods produced would probably be doubled. The total unskilled, semi-skilled and skilled labour remaining may be expected to be about 6 mill. while the number of technicians would no doubt have to increase to about 3 mill. and the technologists to about 1 mill. Since the output would have doubled, this increase in the number of technologists may be considered reasonable. This, said Mr. Coales, only assumes a doubling of output by 50% of working population and may be taken to represent a 50% increase in standard of living which on a basis of 3% per annum should be achieved in 12 years. For comparison it may be noted Russia reckoned that by 1960 production of consumer goods would have been increased three times from the 1950 level.

Further, for economic reasons, as output increased the length of manufacturing runs would have to be increased and product development would become of greater importance, since it would be essential that, when sales of the current products dwindled, there would be other acceptable products to take their place. Also, with much increased productivity, raw materials in America were already being used up at a dangerously high rate and in the future, economy in the use of raw materials would be essential. Product design would therefore have to take this into account. For both these reasons the number of technologists required was likely to be greater.

From a paper to the Wales and Monmouthshire District Section of the I.G.E., Tenby, June 12.

The Development of Aberavon Gasworks

By W. D. REES, M.Inst.Gas E.,

ENGINEER, PORT TALBOT UNDERTAKING, WALES GAS BOARD.

THE first Aberavon gasworks was erected in 1857 by the Aberavon Gas & Coke Consumers Company and was situated approximately a quarter of a mile away from the existing site.

The output increased steadily and by 1938 it was obvious that additional gas would be required to meet the local demands. The Port Talbot Corporation, which now owned the undertaking, took three important decisions:

1. To purchase half an adjoining lake.
2. To obtain a long-term option on adjacent land owned by the Great Western Railway.
3. To open negotiations with Guest, Keen & Baldwins, Ltd. (later known as the Steel Company of Wales), for the supply of coke oven gas from their Margam works.

Negotiations for a supply of unpurified coke oven gas were completed in 1939 and the first supplies of gas were received into Aberavon works in December, 1940. By May, 1941, increased supplies made it possible to shut down the vertical retort house, but the demand for purified gas increased more rapidly than the supply of coke oven gas until, in 1943, it was necessary to recommission the vertical retort house; by 1946 it had increased sufficiently for the vertical retort house to be shut down for the last time, the step grate producer only being kept in commission for a supply of diluent gas.

Critical Situation

The maximum daily output from Aberavon had more than doubled between 1939 and 1947, which brought the usual problems of purification. Despite efforts to increase existing capacity by 1947 the situation was critical, and it was then decided to adapt a disused naphthalene washer for use as a liquid purifier, based on the Manchester process. The experiment was not successful for continuous running, but gave excellent relief during short runs, and it was the judicial use of this plant that enabled the peak outputs to be purified during the winter, 1948-49.

With a maximum daily output of 2.2 mill. cu.ft., the holder storage available at Aberavon of only 350,000 cu.ft. was giving cause for concern, although there was 300,000 cu.ft. storage at Margam and 25,000 cu.ft. at Cwmavon.

Since the recommendations of the Western District Working Party were not implemented in 1948, the Port Talbot Corporation concluded a contract with the Steel Company of Wales for the supply of 280,000 cu.ft. per hour of unpurified coke oven gas. The Corporation also obtained Ministry approval for the laying of mains to Bridgend, Porthcawl and Neath, and for the installation of the necessary compressing plant. Mainlaying work commenced in 1948, and tenders were invited for additional purification plants and a 1½ mill. cu.ft. gasholder.

Before any permanent steps could be taken, it was necessary to carry out a thorough investigation to ascertain the precise nature of the substrata and to establish its load-bearing characteristics. This work commenced in March, 1948, in two selected areas—one adjacent to the bank of the portion of lake owned by the Corporation and the other on the land owned by the British Transport Commission. In all, seven 8-in. boreholes were sunk, their depths varying from 30 ft. to 70 ft.

The survey showed that:

1. All heavy structure loads would have to be carried on piles driven into the gravel and boulder strata.
2. The land owned by the British Transport Commission would be suitable for loads up to 1 ton per sq. ft., without piles.
3. Only very light buildings not sensitive to settlement should be erected without piling on the area reclaimed from the lake.

Another interesting point emerged from the survey, viz., that while the ground water level was approximately 7 ft. below ground level, the lower peat clay was impervious and the water below this was under slight artesian pressure. Advantage was taken of this fact at a later stage to obtain water for cooling purposes.

After the adjoining lake had been reclaimed, it was thought advisable to obtain additional information as to the load-bearing nature of the 'fill.' On this occasion, actual driving tests were carried out using small scale equipment, the test holes being only 2 in. diameter. The results of this second survey confirmed that heavy structures would have to be supported on piles approximately 35 ft. to 40 ft. long.

Extra Machines

While the above investigations were taking place, the mains to other towns were being laid and the necessary compressing plant had to be available. This was done by converting a section of the old horizontal retort house (previously used as a fitting shop) into a temporary compressor house, and installing two 60,000-cu.ft. per hour Connervsille compressors—one driven by a variable speed electric motor and the other by a steam engine. During the reconstruction of the works, this temporary compressor house was enlarged on several occasions and extra machines added to meet the increas-

ing load. When, eventually, it was replaced by the new compressor house, five machines were working with a capacity of 340,000 cu.ft. per hour.

Before describing the new works, it must be stated that the decision in 1949 to transfer to Aberavon the purifiers from Barry gasworks and the Blaenavon coke ovens, enabled immediate full use to be made of the 280,000 cu.ft. per hour coke oven contract, and gave the necessary breathing space for the planning and construction of the new works.

Lake Reclaimed

Planning permission, in principle, was given to the project subject, of course, to design and details of buildings being submitted for approval as and when available. The co-operation we have since received from the local authority departments has been excellent and has played a large part in the smooth development of Aberavon gasworks, and we have received the most helpful suggestions from all concerned. To enable the planned expansion to proceed the remainder of the adjoining lake had to be purchased and the whole lake reclaimed.

The gases received into Aberavon are:

1. Unpurified coke oven gas (c.v. 500 B.t.u. per cu.ft.) at a pressure of 2 p.s.i.
2. Blast furnace gas (c.v. 98 B.t.u. per cu.ft.) at 4 in. w.g. pressure.
3. Mine gas (c.v. 550-850 B.t.u. per cu.ft. according to the percentage of methane) at a pressure of 3 p.s.i.

In addition, the following gases can be manufactured:

4. Producer gas (c.v. 130 B.t.u. per cu.ft.).
5. B.w.g., or c.w.g. (c.v. 320 to 500 B.t.u. per cu.ft. as required).
6. Butane (c.v. 3,200 B.t.u. per cu.ft.).

The 24-in. main laid between the Margam coke ovens and Aberavon works terminates in a volumetric governor and the coke oven gas is measured by two Connersville meters working in parallel—one 18 in. by 54 in. (325,000 cu.ft. per hour) and the other 24 in. by 72 in. (550,000 cu.ft. per hour)—prior to entering the mixing chamber where all crude gases meet before passing through the purifiers.

The 18-in. blast furnace gas main carrying low pressure gas terminates at a fan-type booster which raises the gas pressure to 3 p.s.i. It is measured by a 12 in. by 36 in. (100,000 cu.ft. per hour) Connersville meter and then enters the mixing chamber. The volume of blast furnace gas is regulated by a Sigma-Kent c.v. control unit operating a 6-in. Audco valve in the outlet booster main. The gas sample to the control unit is taken from the mixed gas stream at the inlet to the purifiers.

The 12-in. mine gas main from the Avon Valley terminates in non-return valves and flame-traps as safety devices (in duplicate for maintenance); the mine gas is measured by an orifice meter upstream of a spillover governor. The majority of the mine gas enters the mixing chamber but some is taken direct to the compressor house as fuel for the dual fuel engines. Air is added to this portion by means of a second Sigma-Kent controller, to maintain a constant c.v. of 550 B.t.u. per cu.ft. at the engines.

Producer gas is only used if there is an interruption of blast furnace gas and this is fed into the inl t of the blast furnace boosters from the relief holde

Blue or carburetted water gas, when require , is drawn from the relief holder by means of a Ro tes-type exhauster, passed through the detarrer and the 16 in. by 48 in. (250,000 cu.ft. per hour) Conner ville meter, to the mixing chamber. Butane is added a the outlet of the purifiers, the volume controlled by a third Sigma-Kent c.v. unit, operated by a gas sample taken at the inlet to the gasholder. The volume of butane added is measured by an orifice meter. Finally, the purified mixed gases are measured by two 24 in. by 72 in. (550,000 cu.ft. per hour) Connersville meters working in parallel, prior to passing into the holder.

The carburetted water gas house encloses the c.w.g., steam raising and coal handling plants and is erected on 128 14-in. square, pre-cast concrete piles. The ground floor is tiled, with ducts for the water, oil and tar services.

To reduce noise and vibration to a minimum, the blower room, while incorporated in the main building, has been designed and constructed so that it is in no way connected to the foundations or framework of that building. The foundations for the air blowers are built on layers of cork. All walls of the blower room are of 14-in. solid brickwork and ample light is provided by the inclusion of glass bricks in the outer wall. Access to the room is through double doors, and air is drawn from the top of the main building through a concrete duct lined with perforated zinc sheets.

There are four Gunite-lined steel bunkers, the two for the c.w.g. plant each with a capacity of approximately 70 tons of coke and the two for the boilers each with a capacity of 80 tons of coal. All the bunkers are situated 60 ft. above ground level and run the length of the building. This area has been sealed off from the main building, thus reducing the dust problem and eliminating the posibility of dangerous fumes. In a further effort to reduce dust, the skip hoist shaft is also sealed off from the main building.

Rack-driven Machine

The coal handling plant is arranged for unloading fuel from railway wagons and elevating and discharging it into the two c.w.g. bunkers and the two boiler bunkers, and includes a rotaside tippler with automatic clamping, capable of accommodating and tipping the general run of main line wagons ranging between 10- and 25-tons capacity, including coke wagons with rail tops. The whole revolving cradle is supported by a pair of trunnions carried in pedestal bearings mounted on reinforced concrete piers, and the machine is rack-driven. The rated capacity of the plant is 30 tons per hour.

The steam raising plant consists of two 9,000-lb. per hour at 150 p.s.i., coal-fired Economic boilers of the high velocity, single return, self-contained type. Each boiler is 15 ft. 6 in. long over tube plates by 9 ft. 6 in. diameter, and contains 152 smoke tubes of 2 in. and 2½ in. diameter. The shell is constructed of ¾-in. acid quality mild steel plate. Instrumentation is a Kent's 'Boilermans Mate' panel.

The carburetted water gas plants consist of two fully automatic Power-Gas plants designed to operate with

coke or steam coal as the solid fuel, and with minor modifications can be adapted for the gasification of heavy fuel oil and reforming of refinery gas, should this become necessary.

The rated capacity per plant, using coke, is, when making c.w.g. and using the waste heat boiler, 3.25 mill. cu.ft. per day (c.v. 475 B.t.u. per cu.ft.); without the waste heat boiler, 3.5 mill. cu.ft. per day (c.v. 475 B.t.u. per cu.ft.). Its capacity when making blue water gas and using the waste heat boiler is 2.83 mill. cu.ft. per day (c.v. 475 B.t.u. per cu.ft.) without the waste heat boiler, 3.1 mill. cu.ft. per day (c.v. 475 B.t.u. per cu.ft.). Using coal and making carburetted water gas and with the waste heat boiler, the plant capacity is 2.5 mill. cu.ft. per day (c.v. 475 B.t.u. per cu.ft.). One plant has been modified for the manufacture of producer gas.

Each plant consists of a self-clinkering, water-sealed generator with annular jackets (the top being water-cooled for the comfort of the operators); a cast iron ash bowl which is rotated by means of a circumferential ratchet rack against a stationary plough; a reverse flow chequerless carburettor with conical base to act as a grit arrestor; a chequerless superheater; a conical-type wash box; a Lockheed hydraulic control power unit; a blowing fan; a horizontal waste heat boiler and a Vortex grit catcher. One steam accumulator serves the two plants.

Minimising Corrosion

The carburetted water gas is cooled in two 3¼ mill. cu.ft. per day capacity Whessoe vertical tube horizontal gas flow condensers, each being divided into two passes on the gas side, and four passes on the water side; the 30-in. gas connections are so arranged that the condensers can be worked singly or in series. To minimise corrosion, the water chambers were zinc sprayed, all tubes were galvanised, and the portions affected during expansion were treated with Apexior compound. In addition, cathodic protection by impressed current has been installed on one of the condensers. Included in the condensing plant is a 6-ft. diameter 23-ft. high Lymm type condenser scrubber, for use when manufacturing b.w.g. or producer gas.

The tar and liquor separators are constructed of reinforced concrete, the thickness of which has been kept to a minimum so as to reduce the possibility of damage due to heat. The separator bays have eight baffles and the coke filter bay three. The tar is removed by an adjustable overflow and pumped to a 40,000-gal. tank erected above ground.

The 350,000-cu.ft., 3-lift, column-guided relief holder was previously used for purified gas sent out from Aberavon. The two exhausters are steam-driven and of the Wallers-Rootes type, each having a capacity of 250,000 cu.ft. per hour against 48-in. w.g. The electrostatic detarrer, which is placed on the outlet of the exhauster, is of the Holmes Elex design, with a capacity of 5 mill. cu.ft. per day.

The 100-ton l.p.g. storage plant, designed to work with propane or butane, at present being installed, is similar to that already in use at Cardiff. It consists, in essence, of three 33-ton cylindrical containers and a vaporising unit. The quantity of butane added to the main gas stream is governed by a c.v. controller placed on the inlet holder supply. At Aberavon it has been necessary to pressurise the containers with gas to ensure that the liquid butane flows to the vaporisers which are situated a considerable distance away, which is not the case at Cardiff.

At present, there are four streams of reinforced concrete overhead purifiers, together with a new Gastechnik purifier installation under construction.

The Gastechnik purifier installation under construction has a designed capacity of 6 mill. cu.ft. per day. The 9 ft. 6 in. diameter towers are arranged in three streams and supported on a mild steel substructure of vertical and horizontal R.S.J., giving a portal frame construction. The design of this substructure is the result of co-operation between the contractors and the Board's architect with his structural engineer.

An external gas lock with an Audco valve is fitted at the top of each tower for the admission of pellets which are discharged through a bottom chamber fitted with interlocked inlet and outlet valves. A 2-ton travelling crane hoist elevates the pellet skips for filling the towers. Access to the filling platform is by means of the staircase.

To assist in control, all the instruments and sampling points have been brought together in a single storey building at ground level adjacent to the towers. An integral part of the installation is the pellet screening plant, housed in an aluminium sheeted building. The sulphur will be extracted from the pellets in the sulphur extraction plant at Grangetown gasworks.

The 3-lift, spirally-guided gasholder has a capacity of 1½ mill. cu.ft., and is of all-riveted construction with tank above ground. The 24-in. connections are fitted with anti-flood pipes and an additional outlet has been incorporated. The supplies to the compressor house and Port Talbot district are taken from separate points, thus reducing the possibility of compressor pulsation being transmitted to the Port Talbot low pressure distribution system.

The reinforced concrete foundations include 356 Franki piles, each designed to carry 60 tons. During the driving, selected piles were subjected to a test pressure of 90 tons, and the maximum permanent deflection was .006 in.

There are six Belliss and Morcom gas compressors, three each delivering 218,000 cu.ft. per hour against a pressure of 20 p.s.i. at a speed of 375 r.p.m., and three each delivering 374,000 cu.ft. per hour against 25 p.s.i. at a speed of 375 r.p.m. Two of the smaller compressors are direct coupled to variable speed, 6-cylinder, dual fuel engines having cylinders 11½ in. bore with 18 in. stroke, and the third is direct coupled to a variable speed, V-type, 2-crank, double acting, compound vertical enclosed steam engine.

Air-pressurised

Of the larger compressors, one is direct coupled to a 650 b.h.p., 3,300 volt, a.c. constant speed slip ring induction motor, one to a 650 b.h.p., 500 volt, d.c. compound wound interpolar type motor, having speed variation by armature voltage control from a Nevelin Varionic rectifier unit, and the third is direct coupled to a variable speed, 6-cylinder dual fuel engine, having cylinders of 15½ in. bore and 20 in. stroke.

Both electric motors are totally enclosed and air-pressurised with filtered air, the ducts being purged by blowing through air for a period of at last three minutes

before the motors themselves can be switched on. Under operating conditions, the pressure in the ducts and casings is between 1.5 and 2 in. w.g. There are three 850-sq. ft. aftercoolers, one for each of the smaller compressors, together with three 1,200-sq. ft. aftercoolers, one for each of the larger compressors.

The incoming electrical supply is obtained through two parallel feeders from the South Wales Electricity Board system, two 250 MVA capacity circuit breakers being installed within their nearby Victoria Road Sub-Station for this purpose. Each feeder is of sufficient capacity to supply the requirements of the works, thus enabling maintenance to be carried out on the incoming circuit breakers and cables without interruption of supplies. The feeder cables terminate in two 11-kV incoming circuit breakers and a bus section switch of 250 MVA rupturing capacity which form part of a composite seven panel high tension switchboard, the incoming circuit breakers and bus section being the property of the South Wales Electricity Board.

Incorporated in the Electricity Board's incoming circuit breakers are metering current transformers suitably summated to record the tariff charging conditions, protection equipment of the translay type in order to ensure fully-automatic duplicate supplies, power factor meters, emergency trip button and healthy trip circuit indicator.

Slab Foundations

After site consolidation tests by the University of Wales, Cardiff, it was agreed to erect the administrative and similar buildings on slab foundations. The office block is a two-storey building with senior and administrative staff on the top floor, and technical and grid control staff on the ground floor. The intermediate floor and roof are of reinforced concrete supported by intermediate walls, the outer walls being of patent glazing. Connected to and with direct access from the office block is the single-storey laboratory, incorporating the gas control and analysis rooms. The official calorimeter room is also attached to the laboratory.

The stores and workshops form one continuous steel-framed brick building, the roof being Strammit covered with aluminium Fural. The welfare hall is a 60 ft. by 30 ft. prefabricated, aluminium clad building, and all erection work was carried out voluntarily by the members of the Port Talbot Gas Welfare Club. At the entrance to the works there is a small, single-storey showroom, together with the timekeeping and weighbridge offices.

It will be appreciated that with the variety of gases dealt with at Aberavon, the control of the quality and composition of the final gas becomes increasingly important if we are to maintain the standards required by present day industrial, commercial and domestic consumers. To assist in this sphere Sigma c.v. recorders have been installed for coke oven gas as received, for mine gas as received, for blast furnace gas as received, for c.w.g. as made, for mixed gas as at the inlet purifiers, and for mixed gas as at the inlet of the holder.

The official testing instrument is a Fairweather, connected to the outlet of the grid compressors. There are also specific gravity recorders for mine gas and distributed grid gas.

As a safety precaution, North Thames burners have been installed on both the incoming methane supply and inlet purifiers and set to give a visual and audible warning, should the oxygen content rise above a predetermined figure. Since all the instruments are housed in the main office block, they can be seen easily by the shift superintendent, the grid clerk and the works technical staff.

Most of the sample lines extend to several hundred yards and it is therefore necessary to ensure rapid flows. Where possible this is done by taking the sample from the point of maximum pressure and bleeding the excess into the most convenient low pressure main. In the case of inlet holder gas, the bleed is passed to two street lamps situated in the works yard. Complete analysis of the various gases are taken regularly, and the A.T.B. number is ascertained hourly throughout the day.

All gas for Port Talbot is taken from the second outlet connection of the gasholder and is dried in a Holmes' Multifilm washer, using calcium chloride solution as drying agent. It is then measured by an 18 in. by 54 in. (325,000-cu. ft. per hour) Connersville meter, and from the meter passes into the Port Talbot governor house, which contains the following:

1. One 18-in. safety governor to bypass automatically the dri-gas plant and Connervsille meter, should there be excessive pressure drop over either.
2. Two 18-in. station governors feeding the town centre and new Sandfields housing estate.
3. One 250,000-cu.ft. per hour electrically driven fan-type l.p. booster.
4. One 300,000-cu.ft. per hour electrically driven Rootes-type m.p. booster, feeding the Baglan area (duplicate electrical control panels being installed). Isolating and bypass values situated outside.

Slab foundations are used for the steel-framed building, the ends of which are of aluminium curtain walling with clear glass panels. Here again the roof is lined with Strammit and covered with aluminium Fural. To avoid the use of F.L.P. motor equipment, the electrical equipment is housed in a room separated from the main building by a gas-tight brick wall, the driving shafts passing through wall boxes.

The total capital cost of the work completed at Aberavon gasworks is £1,264,647. This figure does not include the cost of the Gastechnik purification plant, l.p.g. storage plant and meter houses, as full details of the expenditure on these items are not available.

Safety Officers' Guide

AN admirable booklet, *A Summary of Safety Regulations for Gasworks*, has been published by the West Midlands Gas Board. Compiled by Mr. J. B. Cronin, the Board's Safety Officer, the booklet sets out simply and systematically the requirements of the Factory Acts insofar as they concern gasworks. The booklet avoids the necessity for searching through the many Acts for a reference to a particular subject and should be received with heartfelt thanks by those whose job it is to concern themselves with safety of employees on the works. Especially helpful is the section on informative and warning forms, giving, in an easy-to-read table, the official number of the form, and suggested locations for display.